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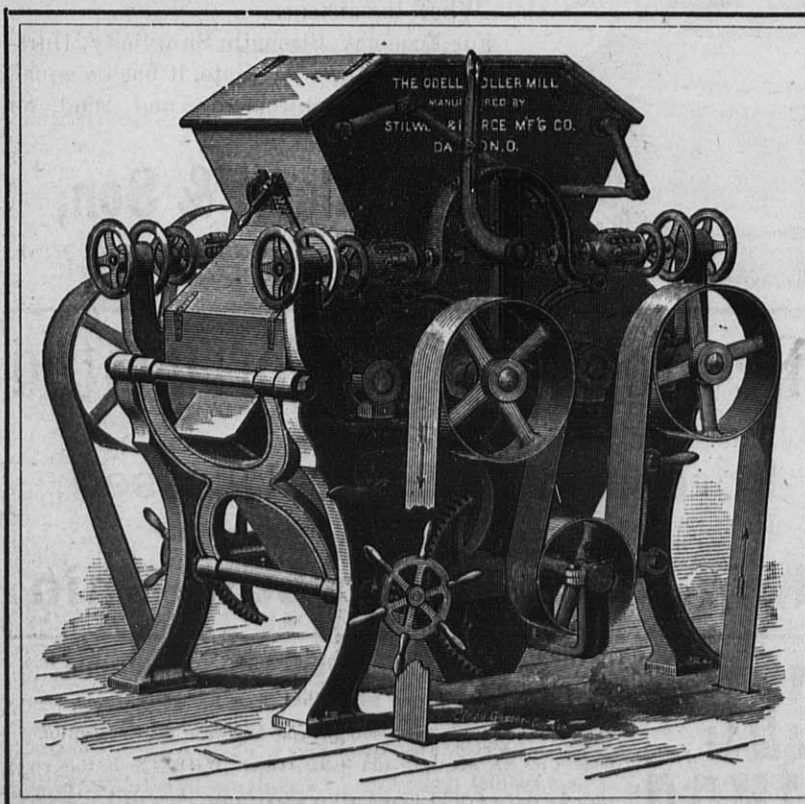
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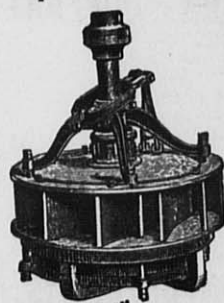
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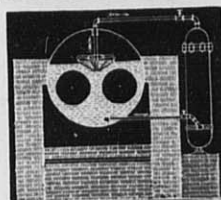
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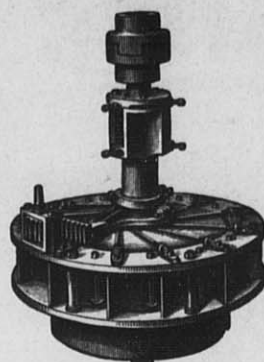
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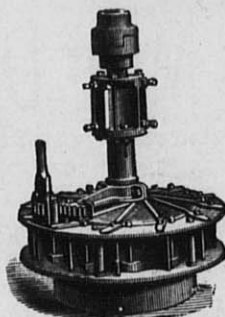
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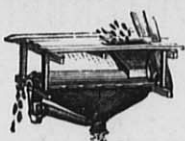
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MILWAUKEE, JUNE, 1886.

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PURIFICATION OF FLOUR.

A PAPER READ BY HOMER BALDWIN, OF YOUNGSTOWN, O., BEFORE THE MILLERS' NATIONAL ASSOCIATION AT CHICAGO, ILL.

Mr. President and Gentlemen:—In compliance with your request, that I favor the association with my views on the purification of flour, I will endeavor to explain my theory, with my reasons for the same. I hold the following to be well founded.

First. That the commercial value of flour is fixed by the degree of purity it has attained, increasing in value as it approximates absolute purity, and decreasing in proportion to the quantity of impure matter it contains; hence the importance of flour purification.

Second. That so-called patent flour is simply pure flour.

Third. That any flour of equal purity is of equal value, whether it be made from purified middlings or in the reduction of wheat in making such middlings. Holding to the position as above stated, I believe as follows:

First. That as the separation of the pure flour from the impure portions of the wheat is the grand result desired, we should eliminate all the impurities we possibly can at every stage in the process. Commencing, first, with the wheat, removing from it all extraneous matter intermixed therewith, next cleaning it in such manner as to remove from the exterior of the berry the fuzz and adhering dirt impurities before commencing its reduction.

Second. That the interior of the wheat berry contains impurities intermixed with the pure flour portions; hence no amount of cleaning of the exterior of the berry will remove the interior impurities. They will have to be removed after reduction has begun.

Third. That the next step towards purification is the removal of the impurities lodged in the crease between the lobes of the berry, which no cleaning machinery, as the term is ordinarily used, can reach.

Fourth. That in order to make pure flour, we aim to make as large a portion of middlings as possible, that we may free the same from all impure particles before their reduction, thus making that portion of the flour practically pure.

Fifth. That in any system of reduction, for the purpose of making middlings, a certain portion is unavoidably reduced to flour, or middlings, too fine to be purified on purifiers as now used, without committing too much waste; therefore, a portion of the flour, which in winter wheat mills is the

larger portion, receives very little of the benefit of purification by middlings purifiers.

Sixth. Believing that the flour made in the reduction of the wheat and from the fine middlings that were too fine to be economically purified, would, if made equally pure, as the so-called patent flour, be of equal value, the question arises, how can such flour be made equally pure, or its purity be increased, without unnecessary waste or useless expense?

SOLUTION.—In mill products, all separations are made by form, size, or specific gravity. By form, we separate the germ, first flattening it on smooth rolls, thus changing its form. By size, we separate the larger impurities, using for this purpose sieves, reels and centrifugals, which are mainly sizing machines. By purifiers, we separate the impurities that are mixed with the medium and coarse middlings, using both size and specific gravity. Inasmuch as the flour and fine middlings made in the reduction of the wheat are intermixed with impurities of equal fineness, their separation can not be made in sizing machines, such as sieves, reels and centrifugals; but as such fine impurities are of less specific gravity than flour or middlings of equal fineness, their separation must be made by specific gravity alone. The nearer the pure and the impure particles approach each other in size and weight, the more difficult is the separation. As the separation is made by air alone, sufficient space must be used, that flour may be evenly and finely distributed in the air, so that the lighter impure matter may be economically extracted by not committing unnecessary waste, remembering that pure flour is of greater specific gravity than impure flour, and that it requires more power to lift it than is required to lift the fine impurities it contains, and the greater the height it is lifted the more perfect the separation.

Acting on the foregoing theory, I have constructed appliances that have demonstrated the correctness of such theory, and, having passed the experimental stage and entering the practical, every-day working stage, I will say to you flour is, can, and will be, successfully and economically purified, and its value enhanced thereby; and that after the proper construction has been made, the additional expense of operation is merely nominal, and that the number of grades is not necessarily increased, but the purity of each grade is increased, and the percentage of low grade decreased, and the economy of yields maintained.

The next question is a commercial one. Will the flour, in consequence of its increased

purity, be sufficiently enhanced in commercial value to pay the expense of the necessary construction, cost of operation, loss on the impure material extracted, and leave a fair margin for profit? If it will do this, the process is a valuable one; on the other hand, if it will not do this, then it is valueless.

Time will furnish the solution of this problem. Having unlimited faith in the correctness of the theory and its practical working, I have made the necessary construction to fully demonstrate its truth or falsity; and, as it is written, "A good tree will produce good fruit, whereas a corrupt tree will produce corrupt fruit, and is hewn down and cast into the fire," I calmly await the coming harvest, having no fear that the tree I have planted is in any danger.

REVIEW.—The foregoing theory is based on the fact that the interior of the wheat berry contains dark, deleterious matter, intermixed with the pure flour portions, which, as a matter of course, can not be separated before reduction commences, and which, in the course of reduction, becomes pulverized and incorporated with the flour, and being of equal fineness as is the flour, can not be eliminated by any bolting device yet invented. This impurity, together with a portion of the finely pulverized outer coating of the berry, having become incorporated with the break flour, and not having been removed, is the sole reason why the break flour is of less value than the flour made from purified middlings. These fine, impure particles, being of less specific gravity than granules of flour of equal fineness, can be eliminated only by properly applied air currents, and, when eliminated, the resulting flour will be equally pure as the patent flour, consequently of equal value.

VALVE MOTION.—An inherent necessity of a valve motion is that it shall open the valve to the widest limit immediately with the passage of the crank past either center, and that it shall remain open during the admission of steam to the fullest extent possible and close as suddenly as possible at the cut-off, and remain closed during the expansion of steam within the cylinder; that it shall open promptly for exhaust, and remain so to the greatest possible extent during the time of exhaust and close as suddenly as possible; and finally that it shall open and close as nearly alike as possible for each end of cylinder. With a valve properly constructed, the setting of it is an easy matter, if the three points above mentioned are kept clearly and understandingly in mind.

COST OF HANDLING GRAIN.

[From the N. Y. Commercial Bulletin.]

Within the past three or four years prominent members of the New York Produce Exchange have often contended that Chicago would eventually lose her reputation and influence as a great grain port. Chicago, through her merchants and her leading journals, has naturally questioned such allegations, and more than once in a retaliatory way has pointed to the voluntary admissions of the business men of this city that New York is hardly able to retain that commerce which her geographical and other facilities should naturally attract and hold against all competitors. Now, however, this contention between the rival cities seems to be practically closed, since within the past few days one of Chicago's leading journals has in effect admitted that the cost of handling grain at that port has driven and is now driving that particular trade to other cities. Though, with characteristic tenacity, Chicago continues to hold much of the commerce for which other ports are making heavy bids, yet it must be admitted that her merchants are just now confronted with some ugly facts. The expenses of handling grain at New York have many times been denounced as onerous and calculated to drive business away to the very city which is now bewailing its inability to keep what it has. According to the *Chicago Tribune*, grain receivers and representative elevator men there have quite recently conferred in regard to this difficulty. The warehousemen, after years of obstinate refusal to reduce their rates, are, it is said, now ready to admit that something must be done, that concessions must be made and that the excessive tolls upon commerce can no longer be tolerated. Stern facts and a few years of experience have taught them a wholesome lesson. Up to 1874 they handled nearly all the grain that reached Chicago. A dozen years ago Chicago merchants felt the necessity for reducing the actual charges on grain, and when the product began to be transferred on track the elevator owners found themselves losing business, for during the two years following 13 per cent. of all the grain that arrived in that city was kept out of the elevators. Six years ago 20 per cent had been lost by them, and in the 12 months ending with last October the elevators handled but 43 per cent of all grain arrivals by rail, 90,404 out of 212,270 carloads being taken in store. The Chicago press gloomily refers to these discouraging features and points to the real cause for their existence. The cost of transferring on track is only one quarter as much as the regular warehouse charge. For 600 bushels of corn, for instance (a carload), the cost of the regular storage and handling is \$11, while on the same quantity handled under the new method of transfer the total is \$2.70.

REDUCTIONS PROPOSED—NEW YORK'S CHARGES.

Right on the heels of this statement that the Chicago warehousemen are now compelled to reduce their fees, comes the more important announcement that the leases of two of the principal elevator systems, which have a nominal aggregate storage capacity of 9,000,000 bushels, will expire in a few months, and will probably not be renewed to the pres-

ent lessees, if released at all. This unfortunate probability will in all likelihood quicken the somewhat dormant spirit of many of the prominent members of the Chicago grain trade; though if these great storage houses are closed the methods of handling grain in that city will be materially changed. It is thought, for instance, that in case the necessity arises the railroads will receive and handle the product in the same manner as they do other kinds of freight, which means that they will deliver the grain without storage charge if removed by the consignee within a reasonable time after its arrival at that port. It is said to be probable, however, that the warehousemen will make some substantial reduction in their charges forthwith, making the fee for the term of first storage half a cent a bushel. This will bring it down to the level of the New York charge, as agreed upon as far back as 1881 by the Grain Warehousing Co., Hazeltine & Co., J. P. & G. C. Robinson, Francis E. Pinto, Woodruff & McLean, Bartlett & Green and the U. S. Warehousing Co.

VIEWS OF PRODUCE EXCHANGE MERCHANTS.

When the above facts were brought to the attention of various members of the grain trade on the produce exchange, there was a natural hesitancy to speak of Chicago's position in this respect.

Mr. E. R. Livermore said, however: "I think Chicago, from this time on, will be less important as the great grain point of the Northwest. Grain is going to be equalized more between the various ports, and going around Chicago as it were, the South and North will hereafter get more. All contract shipments from the wheat-growing country that can go to the seaboard without paying from two to four cents toll are likely to follow the route that pays. In my judgment Chicago has seen her best days in one sense. If the country grows, she will of course retain a good deal of commerce, but compared with the other ports she will most assuredly fall behind. There is this to be said, however: Her system of handling grain is probably the best of any port in the United States, but the expenses attending it are greater than the producing community can stand. Cheaper outlets now present themselves, and Chicago is beginning to feel and realize this."

Edward Annan said the charges for warehousing were double what they were here, and then added: "I cannot say that a reduction in their charges would help New York very much. No one can foretell anything concerning the future grain movement with any degree of certainty. It is like the market. I have been in it for many years, but I, or anybody else, know very little how it will be in a short time hence. The boot-black at the door can give you quite as intelligent an idea on the outlook as an old hand. I find, however, if I put it on a betting basis for example, that to bet on the bright side of the country's capabilities is invariably the safest bet to make."

An old receiver of grain said of Chicago's traders: "They have foisted the system of speculations there, drawing grain from the farmers' hands and putting it in the visible supply until they have speculated themselves well nigh out of house and home. This system of carrying grain is a serious weight on the market. There are reasons

why there should be enough grain out of the farmers' hands to supply demands, but there is no reason why it should be hoarded up for the purpose I have mentioned. I look for more legitimate business during the next few years than there has ever been before, and when that comes you may look for better times in every respect. In my judgment, Chicago's speculative reputation will hereafter receive a set-back, for it is plain that she has seen her best days."

A FEW EPITAPHS

"Here lies John Hill, a man of skill,
His age was five times ten,
He ne'er did good, nor ever would,
Had he lived as long again"

"Here lies Dr. Trollope,
Who made these stones
He took a dose of jalop,
And God took his soul up."

"Here lies one Box within another;
The one of wood
Was very good;

We cannot say so much for t'other."

"Here lies the body of Mary Sexton,
Who pleased many a man, but never vexed one;
Not like the woman who lies under the next stone"

"How sleep the brave who sink to rest,
By all their country's wishes blest?
They sleep not in their regimentals,
Such things being here not deemed essential"

"Poor Martha Sne'l, she's gone away,
She would if she could, but she could not stay;
She'd two bad legs and a baddish cough,
But her legs it was that carried her off."

"Vat is it you vants, Schacob?" asked Mose Shaumburg of his oldest son.

"Give me haluf of a dollar, fodder."

"Vat does you vant ter do mit dose large sums of monish?"

"I vants to make myself some bleasures. I vants to go dot theatre in."

"Choost be a sensible boy, Schacob."

"Vat yer vants me to do, fodder?"

"I dells you how to get all dot bleasures vat you vants midout schpending monish. Ven you goes dot pet in, and dot vetter vash cold, choost stick yer feet outside, and ven dey vash most frozen choost pull dose feet dot varm ped in. I tells you dot vas a bleasure. Vat for, Schacob, yer vants ter make yer olp fodder weep mit dose frivolous bleasures vat vash so expensive."

"SEE hier, fader. Dot celebrated Dr. Hammond says dot in a tousand years all mankind will be bald."

"My gracious, my son, ish dot so? I guess may be den ye better mark our schtock of combs down."

A BAD DAY FOR CABS.—First Cabby—Which way?

Second Cabby—Stock Exchange.

F. C.—Market went all to piecs to-day.

S. C. [turning his horse around]—Then I'll try City Hall.

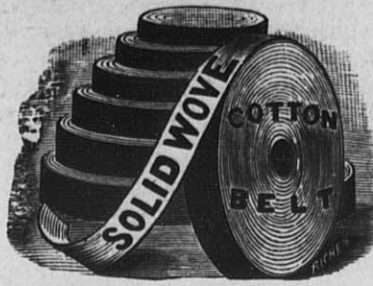
A TIDY VINTAGE.—"What do you think of this wine, Dan?" asked the President.

"Rather tidy vintage, eh?"

"Very dry," replied Dan, smacking his lips.

"Very dry? Well, help yourself to some more of it."

—Wm. Ringre.



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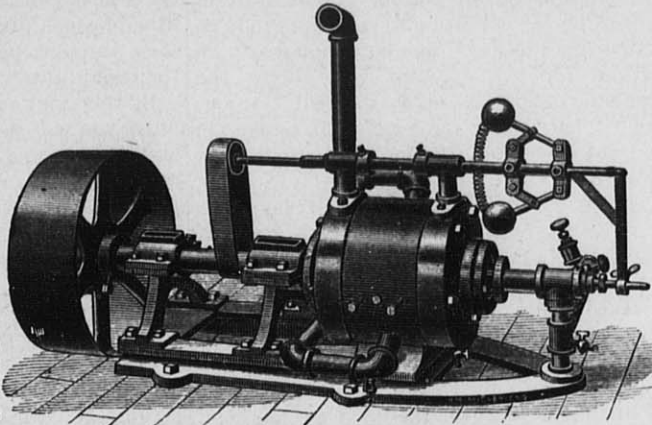
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Send us One Dollar and Fifty Cents and we will send the Table and credit you for one year's subscription to the UNITED STATES MILLER. Address, UNITED STATES MILLER, 124 Grand Avenue, Milwaukee, Wis.

PAPER ON FLOUR DRESSING.

READ BY JONATHAN MILLS, OF CLEVELAND, OHIO.

To the Honored, President, Executive Committee, and Members of the Millers' National Association.

Gentlemen:—On the 8th of April I received the following letter from your Secretary:

MILWAUKEE, WIS., April 6th, 1886.

Mr. JONATHAN MILLS, Cleveland, Ohio.

Dear Sir:—At a meeting of the Executive Committee, Millers' National Association, held in Chicago, April 3d, I was instructed to extend to you an invitation to prepare a paper upon "Flour Dressing and Rebolting in connection with Round Reels as compared with other systems." This paper to be read before the convention to be held at Grand Pacific Hotel, Chicago, May 12th and 13th next.

I trust to receive your early reply of acceptance.

Yours truly,
(Signed) S. H. SEAMANS,
Secretary.

I thank you, gentlemen, for the honor conferred. It was with grave doubts of my ability to properly handle the subject that I accepted the invitation, and now that I stand before you, knowing that I am to read this paper to the most intelligent class of manufacturers in America, makes me still more doubtful of my ability to do the subject the full justice it is entitled to receive.

When we take into account the vast diversity and many different systems now in active operation for reducing a kernel of wheat into flour, you will readily comprehend that it is out of the question to fully treat the subject of "Flour Dressing and Rebolting with Round Reels in comparison with other systems" in one brief article, further than to merely explain the merits and defects existing in the various systems now in use. It is hardly necessary to go back beyond a brief half score of years and give the various modes of dressing flour preceding our generation. I would rather some graphic writer, posted on chronological lore, would write up the history of flour making from the earliest knowledge of the wheat berry. I think we would find that the first bolt was man's stomach, fed by an automatic feeder that gauged the quantity the bolt would properly handle to a nicety, which, by the way, is an essential and important thing to do with any system of bolting.

We will first consider the action of material being handled and bolted through our old friend and stand-by, the six-sided Reel, and will here venture to say that there is at least one hundred and forty thousand six-sided Reels in the mills of the United States, and nine-tenths of all our flour is bolted through them.

In the face of these facts, we had better wait until the king is dead before we bury him or write his obituary, and above all else, be sure his successor is born with a constitution of fundamental principles broad enough to successfully administer his predecessor's estate. The new king must have all the elements necessary to meet the requirements of the new order of things in his dominions.

The hexagon reels were brought into general use through their adaptability of easy construction, and through the general principle of being able, by their rough, tumbling action to act as bran-dusters and at the same time act as flour-bolters, before such a machine as a bran-duster was ever

invented. The moment the bran-duster was brought in as an auxiliary to the six-sided reel, the miller then began to grind higher, and by so doing he made a whiter grade of flour through his hexagon reel. The bran-duster was then the miller's great panacea, and has held favor from that day to the present, and right in this class of machines lies a vast field for improvement: some man must develop a new principle that will clean the flour off without such harsh action. Bran flour should be all gotten off the bran in enough better condition to raise its grade 25 to 50 cents a barrel. There are honors and a fortune for the inventor who solves the problem. I shall attempt it myself the moment I can spare the money, if some one does not solve the problem to my satisfaction in the meantime.

The six-sided reels can be used from cellar to garret for bolting every different grade of material in a mill, although I claim they are not properly constructed to do as good and perfect bolting as should be done, and before I am through, I hope to be able to show you that their work can be done much better by other and more practical methods. The best we can say is, that the six-sided reel has been a lumbering, cumbersome necessity. If they are overloaded they will do clear bolting and send out rich tailings, and if they are not loaded enough they will do specky and dirty bolting. Many millers have been known to return a great portion of the flour right back to the reel to properly load it. They would have been benefitted more by raising the tail of their reel, and even blinding or shortening the cloth to a length that would meet the amount of work required of them.

I do not know of a single instance where the advocates or manufacturers of centrifugal reels claim to have put in full systems of centrifugals, but what all the important and difficult separation are made on hexagon reels. There is probably not a mill in America that reads the milling journals but what has read glowing descriptions of the Eldred Mill at Jackson, Mich., giving its wonderful capacity over what it was built for, and describing its machinery and the elegance of its arrangements and appurtenances, heralding it as a full centrifugal mill. But I notice they were very careful to give no information as to the number of centrifugal reels used. Now, gentlemen, this mill was built under the fostering care and supervision of the champion manufacturers of centrifugal reels, and built as a show mill; and the very best they and their experts could do was to place twelve centrifugals and twenty hexagon reels in it. I call this special mill in solely to substantiate the facts as they exist at the present stage in the art of milling with the so-called full centrifugal system, and not in disparagement of the mill or its owners. Neither do I say that centrifugal reels can not be used to bolt or rebolt certain material in a system of bolting, but I deny that they are any improvement over the hexagon reel, save in the room the occupy. We hear many of the makers of centrifugal reels advocate their use as scalpers on the last or last two reductions of wheat. In this material they are only a short cut for a quick finish at a ruinous expense of the flour. They are disintegrators, and could be used to better advantage by first sending these breaks to a more gentle bolter, and scalp out the

flour in a much purer condition, and then if they want to disintegrate the bran that is sent out of the gentler bolt, let them pass it through a centrifugal reel, and then to a bran-duster as a final finisher, and treat the final finisher of the fine feed in the same manner. Right at this particular step of milling the centrifugal Reel is a useful adjunct, but just as good results can be obtained by passing the stock at this stage through two consecutive bran-dusters, and still better results can be obtained by passing this kind of stock first through one bran-duster, then through high speed smooth rolls, and then again through a bran-duster.

By this manner of treatment at your final finish you will get an absolute clean finish, and if it should not be an absolute clean finish, you have not made your immediately preceding reductions close enough. As rebolters, you are compelled to take the full length of the centrifugal reel, on account of the air currents depositing good flour with the cut-offs. Every bolting device or reel in a mill that is put in for rebolting any grade should do it so perfectly as to make it necessary to cut off a portion of flour that has passed through the cloth at the tail of the machine; and I find in hundred of instances that it is necessary to use frequently as coarse as 8, 9 or 10 cloth for a portion of the way on the tail of the reel to take the middlings out that has been forced through the first bolting reels by the rough treatment it has received, as mostly all flour is first bolted from chop that has previously been scalped through cloth as coarse as from 6 to 10 mesh, and some of the small mills bolt flour right from the stone to the packer, and in many roller mills they bolt much of their smooth-roll chop right from the rolls to the packer. Rebolting from this manner of bolting makes it arbitrary to use a tail cloth on your rebolters of proper mesh to scalp through the fine middlings in order to scalp off the coarse impurities over the tail. Now, a bolt should in every instance be able to dust out the flour clean before it reaches this tail cloth, and have it so completely done that you can use a few cut-off slides before it reaches the tail cloth. If you can not do this you are overloading the bolter, or else it is not clothed to do its work properly: and this is the standard for capacity that should govern all rebolters. If a Bolter has not the above qualities when the atmosphere is in a normal condition, it governs the miller in place of the miller governing the bolter.

You all know how difficult it is to properly control your bolting in a humid atmosphere, and then to strike a damp lot of wheat in addition to the atmosphere being saturated with moisture almost to the point of raining, and this going on for days. These are the conditions that require cut-offs in reels. If they have been loaded to a point requiring every inch of cloth when the atmosphere is dry and the wheat in good condition to mill, when the atmosphere is humid and the wheat damp, you are compelled to cut the capacity of your mill or run ruinously rich tailings. Therefore, any bolting device that is controllable by the cut-offs has great advantage over a centrifugal reel. This one fact is fatal to making a scientific and satisfactory success in rebolting with centrifugal reels.

Even if they should get centrifugals so constructed as to be able to send the tailings

out dry, they can not get over the air currents, and that alone will prevent a defined cut-off.

Gentlemen, I have made the comparison of hexagon reels with the centrifugal in plain language, and have given my reasons for every statement and conclusion. These reasons are incontrovertible facts. The fundamental principles involved in centrifugals are so utterly at variance with common sense and the present stage of the art of milling, that I have no patience to further prove their utter unfitness for a full or even partial system of flour dressing or rebolting, and I deny their right to be classed with round reels.

I will now endeavor to explain the defects and bolting qualities of round reels. I am the inventor of a round reel called a universal flour dresser, but I want you to understand that it also has its bad features, and I shall endeavor to show them up, as I believe I am a more severe critic of my own inventions than my competitors can be, for the reason that I am a closer investigator, or believe I am, than they are. I do not take anything for facts any more unless I can prove them.

Round reels are not new in the art of flour-making, but it is difficult to describe the many differences in their various constructions without drawings or sketches. There are two or more round reels in Mr. Damp's mill at Ashland, Ohio, 14 or 16 feet long and about 20 inches diameter.

These reels have six ribs running lengthwise of the reel, same as a hexagon reel. At intervals of about every four inches along each rib are little pins extending out from the ribs $1\frac{1}{2}$ or two inches long. These pins are so set on each rib that when a heavy stiff wire is wound around the reel from one pin to the next, it forms a spiral from head to tail that supports the cloth. Mr. Damp informs me that these reels have been running for eight years with the same cloths on.

If I remember rightly, these reels were making 14 revolutions per minute when I examined them. They are very slow bolters, and therefore are not practical in a system where capacity is required.

The arms and ribs in a round reel of this type are the only safe-guards it has to prevent its tailing out little flour balls. Any round reel that is not provided with some arrangement of the kind that will disintegrate or burst up the flour balls, can not send out the tailings dustless. Any miller who has used hand sewers understands how these flour balls form.

I have been vindictively assailed in the *American Miller* by one of the advertisers of a round reel, for publicly and privately making this statement. I shall always feel justified in publishing or giving my experience in bolting flour, publicly or privately, and I wish to here repeat in emphatic terms that a smooth round reel with nothing inside of the cylinder of cloth to prevent the flour from balling up, can not be made to bolt soft, sticky flour without sending flour balls over the tail from the size of pin heads to the size of peas or even marbles. They will not handle any kind of stock that is 50 per cent. flour without balling over, unless they are handling a very small quantity of stock; the damper the wheat and atmosphere, the more flour balls they will send over.

My Universal Flour Dresser has a wooden drum cylinder inside a cylinder of bolting

cloth, the cylinder of bolting cloth is supported and carried around with, and at the same speed of the drum cylinder. They revolve at speed not greater than a hexagon reel, which places them, in the matter of motion, their equal. They will scalp wheat breaks as clean as hexagon reels and do it in a more gentle manner, thereby making less scourings in that operation. They will scalp out the flour from the chop from the stock that is scalped through the wheat break scalpings. They will grade the middlings without scouring off a large amount of flour to be sent to your purifier and pulled into your dust rooms. They will make perfect separations of your germ stock without breaking up the flattened germ as much as a six-sided reel will. They are the most perfect rebolters of any device so far invented that I know of. You can cut off as many grades as may be required. The cut-offs are clear cut and defined, as the reel does not create air currents to intermix good material with poor or poor material with good. They have capacity far greater than hexagon reels or any other bolter I know of, and require less power to do the work. The inside cylinder is so constructed as to absolutely prevent the formation of flour balls. They will send out the tailings dustless on any grade of material. The action of the bolt is such that the material is rapidly and gently being delivered from the cylinder to the cloth in the best possible manner to insure rapid bolting.

They require less attention than any other special machinery in a mill. They will handle any and all material in a mill in a far better and more profitable manner than any other system or combination of systems than can be devised from other bolters.

We have a number of these reels in different mills that are bolting the break flour direct from the scalping reels and scalped through No. 8 cloth. I know one of these reels that is taking this kind of chop that formerly required four eighteen-foot reels to do the work. This particular reel is clothed with 12 and 13 cloth, and is bolting and sending from ten to twelve barrels of flour through these numbers of cloth direct to the packer every hour.

In many other places they are doing what required two eighteen-foot reels to do. I mention these facts to show you that their capacity is immense. Now, gentlemen, they require a much less number to do a given amount of work than any other known machine or bolt, and require less space and power, and if any known device is capable of superseding and taking the place of the hexagon reel, this is the machine that will most surely do it. Our trade is rapidly on the increase. They are making their own friends wherever placed. Our orders are largely from those that have tested them. We have a large number of complete or nearly complete and full systems of these bolts in use, and we seldom ever hear a complaint from those who are using them. We keep no traveling agents to represent or misrepresent us. We have placed between six and seven hundred of these machines with hardly a single error.

This is the machine that will gradually and surely supersede the hexagon reel if it ever is to be superseded by any of the present and known devices.

The material in a hexagon reel has a very loggish, sluggish and swashing action. The material is lifted up in part by the centrifugal momentum imparted to the material by the rotation of the reel, and partly by the ribs and angularity of each flat face, traveling from a level plane to almost a perpendicular plane before the weight of the material is sufficient to overcome the centrifugal force imparted to it by the circular travel of the faces of the reel. The speed the reel travels universally governs the point or height which the material reaches before it falls off. The speed of the reel imparts a centrifugal force to the material until it reaches a point where the centrifugal force is overcome by the weight of the material. When it has reached that point, gravity and the motion of the reel impart a centripetal movement, and it is cast downwards and inwards towards the center of the reel, sometimes under, sometimes over and sometimes square on to the reel shaft. Where it is cast under or over the shaft, it strikes the cloth on the lower face. When it is in a level or partially level position, it strikes the cloth with great force. The material is cast off intermittently in heavy, bulky volumes. If a six-sided reel is running thirty revolutions per minute, there are 180 of these volumes turned loose with a heavy thud back on to the lower part of the reel every minute. A reel will do far better and cleaner bolting where the fall of the material is broken by striking the shaft.

Thirty or thirty-two inch 6-sided reel are run at various speeds, from 25 to 35 revolutions on an average, or probably 75 per cent. are run at about 30 revolutions. At 60 revolutions they would not do any work to speak of, but would swing the material around and hold it tight out against the cloth by centrifugal force.

Wherever a 6-sided reel is running with a very light load, it should be speeded down to a motion that will do the work properly, in place of returning material to give it load enough. You can in every instance make wonderful improvements in your flour where the reel is too lightly loaded, by reducing the speed.

In about all the gradual reduction mills in this country, the hexagon reel is used as scalpings for the different wheat reductions.

These scalpings are covered with wire cloth of various degrees of fineness. There are a few instances where silk gauzes are used on the last two or three reductions, and those that use silk cloths for the purpose know that it pays them to do so by the better results obtained. I wish to say here that the wire-covered scalping reel is also a scouring machine, and is of great detriment to the break flour, from the fact of the scouring action of the chop on the wire, wearing off the enamel of the berry, as well as the fibrous, filmy edges of the bran particles into a fine and almost impalpable powder that imparts a dirty, nasty looking shade to the break flour, for it is as fine as the flour and will bolt through the cloth with the flour. It is the very worst and most contemptible piece of machinery in any mill. Their scouring qualities are so assiduous that they never let up, no difference how badly worn the wire becomes. They knock anywhere from ten to twenty cents per barrel off of your break

(CONTINUED ON PAGE 58.)

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, JUNE, 1886.

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THE Daisy Roller Mill in this city has started up and the machinery runs smoothly throughout. The mill will very soon be running constantly. It is now turning out about 900 barrels per day.

AMONG THE NORTHERN LAKES

of Wisconsin, Minnesota and Iowa, are hundreds of delightful places where one can pass the summer months in quiet rest and enjoyment, and return home at the end of the heated term completely rejuvenated. Each recurring season brings to Oconomowoc, Waukesha, Beaver Dam, Frontenac, Okoboji, Minnetonka, White Bear, and innumerable other charming localities with romantic names, thousands of our best people whose winter homes are on either side of Mason and Dixon's line. Elegance and comfort at a moderate cost can be readily obtained. A list of summer homes with all necessary information pertaining thereto is being distributed by the CHICAGO, MILWAUKEE & ST. PAUL RAILWAY, and will be sent free upon application by letter to A. V. H. Carpenter, General Passenger Agent, Milwaukee, Wis.

RELIGIOUS ASPECTS OF THE AMERICAN PROTECTIVE TARIFF.

NORTHWESTERN TARIFF BUREAU, }
MILWAUKEE, WIS., May 27, 1886. }

Editor of the United States Miller:—

I am gratified at the improvement in Mr. Bates' style. His last article contains but two foul splashes—"Government pap to hoary-headed infants," and "Hide bound old blue-bottle protectionists." Another passage or two through the free trade "grain dryer," and he will not "show parch, shrivel or other evidence of artificial drying" and possibly be free from "any slight odor from sweat or heat," and be "in a condition to grade" as a gentleman in discussion.

Mr. Bates says of himself:

"Had I been the paid agent of a Free Trade organization, what changes would have been rung on that circumstance, together with the customary mention of 'British gold.'"

Whether a paid agent or not is of minor importance; but why deny when not accused.—"A guilty conscience needs no accuser," is an old adage.

Mr. Cobden received £200,000 in "British gold" for advocating "free trade" in England, and yet only the assertions and writings of Mr. Cobden are attacked or defended to this day.

I am deeply grateful to Mr. Bates for quoting Mr. Joseph Medill as authority &c., but think he will regret the choice before I get through with him. *Chicago Tribune*, May 23, 1886, Mr. Medill says editorially:

"If the pro-English influences which aided the election of the present administration are too strong for them they had better drop the matter altogether."

Tribune, May 19th, 1886, as to better paid labor in this country, Mr. Medill says:

"The ingratitude of the Bohemian Socialists is shown in strong colors when their condition 'at home' is contrasted with the opportunities open to them in this country, which they seek to subvert. * * * In this country Bohemians work fewer hours and get from twice to three times the wages they could possibly earn at home, and can buy their food much cheaper, and yet they abuse the hospitality offered them and assault the laws and institutions which furnish them such generous opportunities to improve their condition."

Mr. Bates says: "It was mainly upon this point that the issue of this discussion hinged." The *Tribune* shows that the statement of the *Inter-Ocean* was true, that laborers in this country "working fewer hours and getting from twice to three times they could possibly earn at home."

I shall quote Mr. Medill frequently, he being Mr. Bates' chosen witness. Mr. Bates says of the tariff: "While it brazenly proclaims to protect our manufactures, trade and commerce, that tariff severely cripples all these industries. Look, for instance, at commerce and navigation."

In refutation of the above I cite the letter of Alexander McEwan, of England, to Lord Beaconsfield, December 1, 1879:

"The United States have grown from 20,000,000 of population in 1845 to 50,000,000 at the present day; their exports from \$100,000,000 to \$775,000,000 per annum. Their home trade carefully protected, estimated now at more than \$5,000,000,000 exceeds our whole home and foreign trade put together. As far as their relations to us are concerned, they are sending us this year over \$500,000,000 of commodities, and taking from us about \$100,000,000, and while we take from America principally food and cotton, the commodities she takes from us are such as she can produce herself or do without in case of need. In war she would be independent of us, but in our requirements we are absolutely dependent upon her."

Such is the testimony of one of the ablest men in England, furnished by request to the Prime Minister of Great Britain. Comment is unnecessary—the truth speaks for itself.

Mr. Bates continues: "American tonnage was driven out of the foreign trade by the tariff, and that tariff effectually prevents these United States to-day from asserting supremacy upon the seas."

Before the rebellion, which was fought by the South for free trade with England, had we no "American ocean tonnage"? How was it destroyed? By England and not by our tariff. The hostility of England to "American ocean tonnage" is more than a hundred years old. Free traders, like Mr. Bates, claim that the ocean tonnage question is a strong point in their favor, whereas it is absolutely the weakest they can urge. Mr. Bates will find in the celebrated oration of Richard Rush in the House of Representatives July 4th, 1812, what I now quote:

"When the late Col. Henry Laurens left England in the year 1774, he had previously waited on the Earl of Hillsborough, in order to converse with him on American affairs. In the course of conversation Colonel Laurens said, the duty of threepence a pound on tea, and all other taxes were not worth the expense of a war."

(Mr. Bates, please note the answer.)

"You mistake the cause of the controversy," said his lordship, "You spread too much canvas upon the ocean; do you think we will let you go on with your navigation, and your forty thousand seamen?"

Mr. Rush continued:

"The same hostile spirit to our growing commerce has actuated every minister, and every privy council, and every parliament of Great Britain since that time; and it is the spirit she manifests towards other nations. The recent declarations made upon the floor of the House of Commons in debate upon the orders in Council, add a new corroboration to the proofs that this monopolizing spirit, has been one of the steady maxims designed to secure and uphold her absolute dominion upon the waves."

To disprove the statement of Mr. Bates and other free traders, I will quote from one of my lectures to "American Students on the American Protective tariff." I said, to show the different conditions of England and the United States:

"England is a maritime country, America is not in the same sense as is England. British colonies, her Indian and other outlying possessions need her protection through her

naval and mercantile shipping, even for communication apart from defense. The United States is all on one continent. We have no outlying possessions, and we may be thankful that we have not—hence, the cry of "Ships, colonies and foreign commerce," does not apply to the United States as it does to England.

"England must defend herself on the sea. Let an army once land on her shores, and, through the shipping of her enemy be maintained, and the conquest of England would be but a question of time.

"Once blockade her ports and she would die of starvation, for she has not the means, within herself of sustaining herself, that is, of feeding her people from her own resources. If the United States and Russia, and one or two other grain-growing countries should combine, and withhold their food from England she would starve to death. With all her boasted power, she is to-day the most dependant country in the world—she must swap goods for grub or go hungry."

A protective tariff pamphlet, published in England, July 1, 1885, says:

"With recent changes and developments of naval warfare, it would be possible for a foreign power to intercept by armed cruisers, or by torpedo boats, many of the vessels bringing grain to England. Should the enemy obtain even a partial success, bread would be driven up to famine prices, whilst any lengthened stoppage of supplies would place the country at the mercy of its opponents."

"England has always been our superior in naval and mercantile shipping. In 1839 she had sixty-six steam war vessels, while we had but one; she then had 29,777 tons steam war vessels; in construction, 4,649 tons; total, afloat and building, 34,426 tons. We had not to exceed 1,000 tons of steam war vessels for ocean navigation.

"But in the same year, 1839, the tonnage of our steamers engaged in our internal commerce was nearly the equal of Great Britain's, hers being in all 810 vessels, tonnage 157,840, horse power 68,250; the United States had 800 steamers, tonnage 155,473, horse power 57,019.

"We have been developing a continent, several states of which are larger than England. Our railroads span that continent, planting villages, towns, cities, extending from the Atlantic to the Pacific, where millions upon millions from foreign lands have founded homes with permanent independence and prosperity.

"Send a thousand ships across a sea, no trail is left, nothing indicates their course. Extend a railroad, or construct a new one, five hundred or a thousand miles into a new country, and the wilderness is reclaimed to civilization and peopled. Farms, furnaces and factories spring up as if by magic. Such is the civilizing influence and benefits to mankind in this country of extending railroads. Every mile of new railway is a new artery, renewing and increasing the vital force of the country, imparting fresh vigor and prosperity to the nation. Since the Morrill tariff of 1861 we have built five times as many miles of railway as there are miles in Great Britain.

"When the rebellion broke out, we had a fair mercantile marine. By whom was it destroyed? By the Alabama and other British privateers, carrying the confederate flag manned almost wholly by British sailors.

"England has always fought for her supremacy on the ocean; she has never in the past, and never will in the future, if she can prevent it, permit any single nation to be her equal, much less her superior. Long, long ago, she snatched the brooms from the Dutchmen's mastheads, when Holland was triumphant on every sea, and substituted her "whip," or pennant, in their places; but not until oceans had been reddened with the blood of near a hundred thousand seamen, sacrificed to acquire and maintain British naval and mercantile supremacy. There England must maintain that supremacy over all, or sink to a second rate power.

"No stronger proof of the desire of the British government to break up our Union could be furnished than the fact of nearly twelve hundred blockade runners having been captured by our navy during the rebellion.

"As near as I can learn, from considerable research, every one of those blockade runners was commanded and manned by Englishmen, and without exception were loaded with munitions for the confederacy, carrying cargoes only that were contraband of war. So far as I know, not another nation sent a blockade runner to our coast. Of this conduct I am justified in quoting the language of Richard Cobden, as applied to a former British ministry:

"Why they carried out in its unvarnished selfishness a national British policy; they had no other idea of a policy, but a national British policy, and they carried it out with a degree of selfishness amounting to avarice."

"And as to the Alabama, and other English pirates that swept our merchant marine from the seas, that lit up the sky over nearly every ocean with the flames of our burning merchant-men. Those "corsairs" were the free-trade whelps of the English lion, begotten and born in the Cobden Club den, and turned loose to prey on our "American ocean tonnage." They always found a welcome in every English port, while American naval vessels bearing the "flag of our Union" were vigorously excluded. In the defense of Charleston it was English cannon supplied by England to the Confederacy that crashed against the sides of our iron-clads. Nor was it alone in Charleston, "Blakely" and "Armstrong" were familiar names found on Confederate cannons; hence as the poet had it, addressing John Bull on his neutrality:

"No wonder we got tearing mad John,
For English names were on the guns;
That, you called neutral guns John,
That killed our brothers and our sons.

(From an address "American Students and the American Tariff," by John W. Hinton.)

England leads the world in ocean tonnage. According to Mr. Bates she ought to lead the world in prosperity. Yet the reverse is the fact, for no nation is so depressed or suffering so much to-day as is England. So severe is the depression, that recently a Royal commission was formed to discover the causes. That commission received replies from all the leading Chambers of Commerce, Boards of Trade, and manufacturing associations, asserting that it was the protective tariffs of other countries, excluding English goods and their manufacturing so much for themselves. Mr. Bates should read the report of that "Royal Commission."

To return to the terrible suffering of England's shipping or ocean tonnage.

That free trade organ, the *Chicago Times*, said editorially, Oct. 19, 1884: "Forty ocean steamers lie idle in the docks at Sunderland, England, and most of the shipyards are closed. Subscriptions are being made by the public for the unemployed workmen."

The *Chicago Tribune*, another free trade organ, said editorially, Nov. 26th, 1884: "A hundred fine steel steamers tied up useless along the banks of the Tyne; swarms of stalwart British sailors wandering in the streets taking their chances of living on the bounty of the soup-kitchens; children quarreling with dogs in the alleys for a bite of garbage; lines of tenements inhabited by people who have not a rag to cover them during these wild nights of November, not a bed to lie on, not a place to rest save on the rickety floor, no coverlid to wrap the new born baby in—this is, to-day, one of the sights of Merrie England."

The correspondent of the *Pall Mall Gazette*, visiting the ship-yards, writes: "Your discharged men are badly off?" "Oh, yes! shocking! It won't bear thinking about." "Will you let one of your men go with me for a day to the worst quarters?" "Certainly. But let me earnestly advise you not to go. I assure you the condition of the people is too terribly bad. Let me put it plainly. I mean

that there never was such destitution known, and you'll be sick—physically sick, I mean." The scenes he described are truly revolting.

Noting since it was telegraphed from Glasgow that the ship-building trade on the Clyde is greatly depressed, over 70 per cent. of the workmen being unemployed. Soup-kitchens have been opened to relieve the sufferings of the poor.

Again, a short time ago, a procession of British seamen marched through London, England, to make a demonstration against the government for not relieving the depression, bearing banners, "British workmen are starving that foreigners may live," "British labor is sacrificed in the interest of foreign labor," etc.

Such is English free trade testimony to free trade England's condition, which depends upon foreign commerce and foreign markets. And this while England's merchant marine is greater than ever; while all foreign markets are as open to England as they have been for years, excepting in those countries which have passed tariffs to protect themselves. England is suffering as no other country in the world ever suffered.

THE WOOL TARIFF, WOOLENS, ETC.

Mr. Bates quotes Mr. Medill as authority on the wool-tariff, etc. As I have before said, the authority is not a wise selection, for by no one that I know of have such freetraders, as Mr. Bates, ever been more lashed than by Joseph Medill, of the *Chicago Tribune*.

Mr. Medill said truly:

"There never has been a financial collapse in the United States during the existence of a high tariff. The country has never escaped from one when it had a low tariff, and the lower the tariff the worse the crash, and just as soon as a "free-trade" policy is abandoned, and a protective policy adopted, the country begins to revive and business to prosper, and so continues until the disciples of Smith and Wayland, Calhoun and Jeff Davis are again allowed to make another experiment with their pet humbug. It does seem that the experience of three generations ought to teach the fourth one that a wolf-trap, however baited, is a wolf-trap still."

Mr. Bates says of himself:

"My early home was in Illinois before the advent of railways. My father's log cabin stood in a wilderness of prairie, over which deer bounded freely by day, and wolves prowled and howled by night."

It was for just such free-traders as Mr. Bates that Mr. Medill furnished the simile of the "wolf-trap being still a wolf-trap, however baited."

As to the lowered wool-tariff upon farmers, etc., Mr. Medill is equally forcible when he goes for such free-traders as Mr. Bates. Mr. Medill says:

"The farmers have got back in the shape of "bounties," or protection on raw wool, more than they have paid out in increased cost of their clothes. They would be a good deal worse off with the duty on wool and woollens repealed, than they are now with both duties on, and the government would find itself out of pocket a good many millions of revenue, both from the tariff and tax on the home article. The less the crazy free-trade quacks are allowed to meddle with the tariff the better for the whole country—government and people."

Mr. Medill says, we should

"Multiply manufactories in the West, rather than in England and France, for thereby the West will obtain the true and genuine free trade it needs so badly; but relief will never be found by grasping at the British free-trade humbug * * *. Such free trade

(CONTINUED ON PAGE 54.)

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THE MILLERS' EXCURSION TO JACKSON, MICH.

Nearly four hundred gentlemen connected with the milling interests accepted the invitation of Mr. Geo. T. Smith, of the Geo. T. Smith Purifier Co., of Jackson, Mich., to participate in an excursion from Chicago and to enjoy the hospitalities of the company during their sojourn in Jackson. The party was conveyed to Jackson in two special trains, composed of Pullman and private cars, over the Michigan Central railway, in charge of F. T. Whitney, the assistant general passenger agent. The excursionists were not only provided with the handsomest cars to be procured, but with every known facility for making the two hundred miles of iron lying between Chicago and Jackson be forgotten. A stop was made at Marshall, Mich., the well-known "chicken-pie" eating-house, where a neat lunch was provided for and enjoyed by the travelers.

The two special trains, with their thirteen car-loads of "dusty millers," after a rapid run reached the city, and were welcomed at the station by Col. Dickey and many other representatives of the Smith Purifier company. The brass band, composed of operatives of the purifier works, greeted the excursionists with a musical welcome, and, forming into line, the excursionists were conducted to the Hibbard, Hurd, and other first-class hotels, where ample provision had thoughtfully been made for their reception and entertainment. The regular clerks of the hotels, for once, had a "night off," Col. Dickey acting as the room-clerk of the Hibbard, while the other hotels were captured and held by his assistants for the benefit of the rapidly arriving crowds.

Mr. Smith's arrangements for taking care of this large assemblage were made on the same generous scale that is synonymous with whatever this company undertakes. This is the second large excursion party of millers that have been brought to Jackson to inspect the extensive works of the George T. Smith Middlings Purifier company and the Model roller mill, completely furnished with the complete centrifugal bolting system by the company. It is worth any milling man's time to inspect this mill, furnished as it is with the latest and most improved machinery, much of it manufactured by the George T. Smith Middling Purifier company, whose extensive works adjoin the mill.

The opera house, where the grand banquet was held, was a mass of brilliant colors. The decorations by Mr. Winn consisted largely of the national colors, intermingled with happy ideas borrowed from our Japanese friends. The stage represented fairy land from "Undine," while the conservatory of Mr. George T. Smith supplied hundreds of rare plants and flowers. The music was furnished by the handsomely decorated band, composed of a score of employees of the purifier manufactory.

The tables, under the charge of Col. Clark, of the Hibbard house, presented a glittering mass of crystal and china, while beautiful flowers were supplied in lavish profusion. Over four hundred representative millers took part in this grand banquet.

The sight within this vast banquet hall was simply glorious, and was admired from the galleries by a great audience, made up wholly of employees of the purifier company, who had been highly complimented during the

day by the visiting millers for their skill in mechanical work and their fidelity to their business. It was arranged by Mr. Smith to have W. K. Gibson acknowledge their presence in the galleries and express to them the approbation of their employers, but an accident disarranged the programme, and afterwards an opportunity was not presented, an omission which is sincerely regretted by the Purifier company.

The discussion of the eatables and drinkables having been carefully considered, Mr. Crosby, the president of the Millers' association, returned thanks for the many attentions received by the visiting millers. Mayor Bennett, on behalf of the city, threw the gates wide open to the Millers' association, and was repeatedly applauded.

Ex-Gov. Blair, Michigan's war governor, made a ringing speech. Many other speeches were made by members of the association and citizens. The excursion was a most successful one in every respect. A handsome tribute was paid ex-President Christian, who is now in declining health, by the association rising en-masse in response to a toast that he might live a hundred years. At the adjournment repeated cheers were given for George T. Smith and the Purifier company. The party left at midnight on a special train for Chicago.

ITEMS OF INTEREST.

THE highest chimney yet built in the world has recently been completed at the Mechernich Lead Works in Germany. The whole height of the structure is approximately 440 feet, 11 feet of which is under ground. The subterranean portion is of block-stone, 37 feet square in plan, all the rest is of brick. The plinth, or lower part of the chimney above ground, is 34 feet square, so that the height of the shaft is nearly thirteen times the lower diameter. For about 34 feet the chimney continues square, then becomes octagonal in plan for a little distance, and finally changes to a circular form, retaining this shape to the top. The exterior diameter of the shaft at the top is about 11½ feet. The flue is 11½ feet in diameter at the bottom and 10 feet at the top. Until the completion of this chimney that of the St. Rollox Chemical Works near Glasgow, which is 434 feet high, was the tallest in the world.

NEARLY all smoke may be consumed without special apparatus, by attending with a little common sense to a few simple rules. Suppose we have a battery of boilers, and "soft coal" is the fuel. Go to the first boiler, shut the damper nearly up, and fire up one-half of the furnace, close the door, open the damper, and go to the next boiler and repeat the firing. By this method, nearly if not quite all the smoke will be consumed.

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Two runs of stone; one Garden City Purifier; one Victor smutter; one separator; one corn sheller; two reels; one Lefell wheel 48-inch under ten-foot head, and the head can be increased to fifteen feet if required. Plenty of water all the year around. Dam is on solid rock bottom, only 4-6-12 high. Good wheat country. Nearest railroad, 5 miles. Nearest town, 2 miles. Twenty-nine acres land, house and stable for \$3,000. One thousand dollars cash; time to suit the buyer at 6 per cent. interest. Will sell half. Address

F. J. DWARSHAK, Festina, Iowa.

FOR SALE CHEAP.

New all roller mill containing 11 pairs of rolls 9x12, 9x18 and 9x24, 6 reels, 3 purifiers, 1 centrifugal reel, 5 scalping reels, separator, smutter, corn sheller and 4½-foot feed stone. Water power mill driven by a 50-inch special Lefell wheel, 8-foot head and plenty of water the year around. Millhouse 35x50, 2½ stories; 11 feet high stone basement. The mill was built and started up new two years ago last June. It is situated in the best milling town and best wheat county in the State of Wisconsin. Only one mill to compete with in a radius of 10 to 25 miles; all a thick settled country around. The best of reasons for selling. For particulars call on or address

A. F. ORDWAY & SON, mill builders and furnishers, Beaver Dam, Wis.

FOR SALE, EXCHANGE OR RENT.

Four-run Water Mill. Best Water Power in Clinton Co., Ia. Water enough the year round to run 20 run of stones.

JOHN F. MCGUIRE,

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MILL FOR SALE.

The whole or half interest in a 50-barrel full roller mill, on account of death of partner. Good winter wheat section, climate and location. Will take one-third on the whole value in Western land. Address

"EAGLE ROLLER MILLS," Plymouth, Ill.
or U. S. MILLER, Milwaukee, Wis.

FLOURING MILL AND ELEVATOR FOR SALE.

All or one-half interest in a first-class 75-barrel steam flouring mill and elevator. All new and in good order. Located at Meriden, Jefferson Co., Kan., on the Atchison, Topeka & St. F. and the L. T. & S. W. Railroads; in the best wheat and corn growing county of the state. Building, heavy frame, 30x40, three stories, attic and basement, with stone engine room 22x34; all under iron roof. Capacity of elevator, 15,000 bushels; corn crib, dump and sheller. Side track to mill. Two sets 9x18 Allis Mills; three burrs on wheat, one on corn; flour packer, scales, etc.; two Smith Purifiers; Barnard & Leas Separator; one 12-foot two-reel chest; one 16-foot four-reel chest; one corn meal bolt; California Brush Finisher; one Western Corn Cleaner. Grain trade more than pays all running expenses. A splendid chance for a good miller. Exchange trade good. Mill cost over \$18,000. Will sell all for \$12,000, half cash, or half interest for \$6,000, half cash, or, if not sold by July 1st, will be leased for a term of years to responsible parties.

J. O. PEEBLES, Sec'y,
MERIDEN MILL CO., Meriden, Kan.

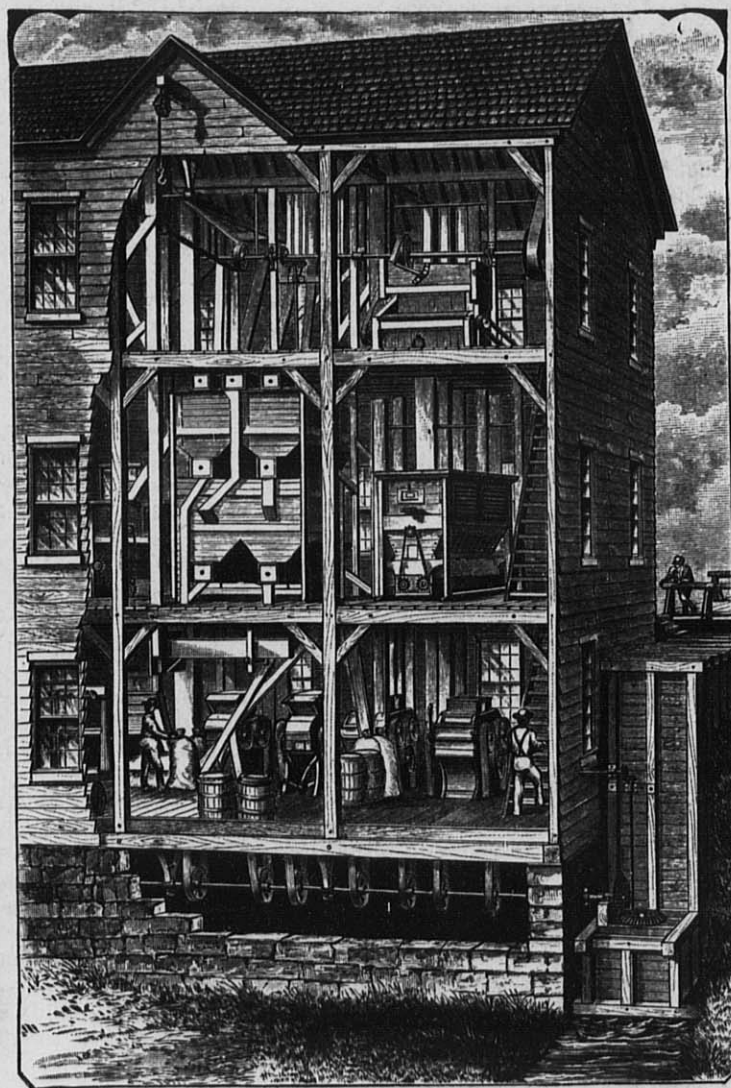
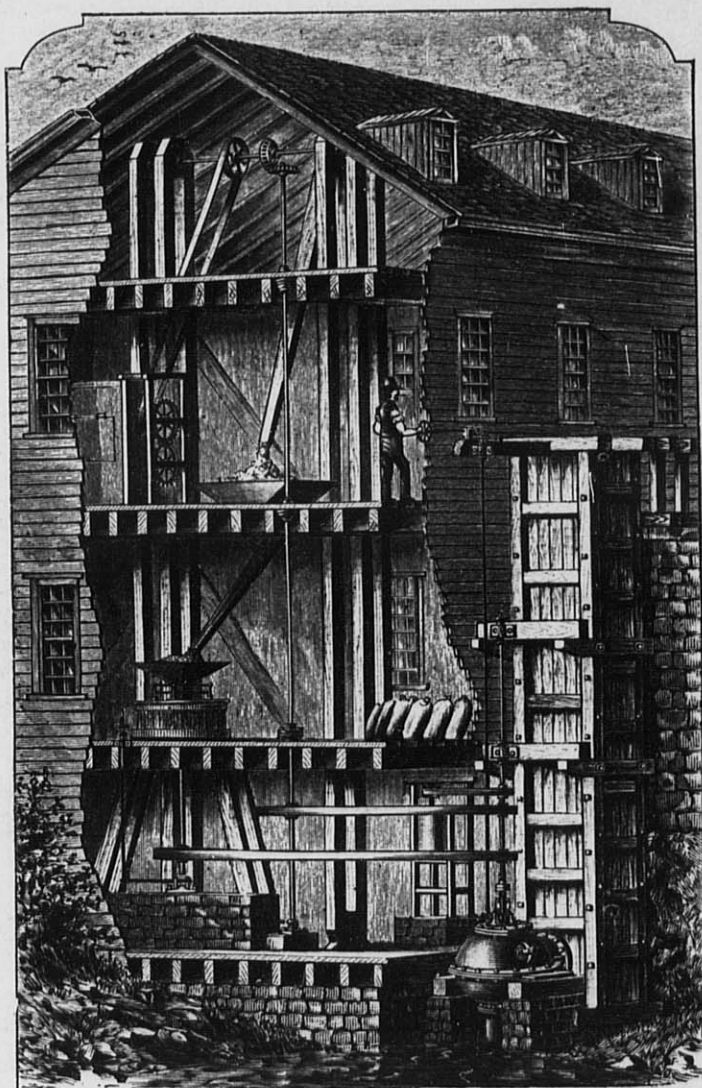
JAMES LEFFEL & CO.'S TURBINES.

We present herewith two illustrations showing the application of the Turbine Water Wheel manufactured by Messrs. James Leffel & Co., of Springfield, O.

Fig. 1, shows the Turbine as attached to the machinery of a flour mill using stones for grinding; and Fig. 2, shows the Turbine driving a roller mill. The Leffel Turbines have a world-wide reputation for transmitting power economically. A catalogue giving full information with numerous illustrations will be sent to interested parties on application.

THE Case Mfg. Co., Columbus, O., have received orders since their last report as follows: From Spaulding, Miller & Co., Montpelier, Ind., for 17 pairs of rolls and all necessary machinery for a complete roller flour and corn meal mill on the Case system; from M. Sellhorn, Boonville, Iowa, for one pair of rolls; from the Bennington Steam Flour Mill Co., Bennington, Kansas, for 17 pairs of rolls, and all other machinery necessary for a new complete roller flour and corn meal mill on the Case system; from the Anchor Milling Co., Mt. Gilead, O., for 16 pairs of rolls, and all other machinery necessary to

Wyandott, Kan., for four pairs of rolls; from L. Strong Co., Omaha, Neb., for 19 pairs of rolls, one scalping reel and two purifiers; from J. B. Monning, Ft. Wayne, Ind., for 13 pairs of rolls and all other necessary machinery for a full roller mill on the Case system; from J. P. Felt, Emporium, Pa., for two additional pairs of rolls; from Dehner & Wuerple Mill Building Co., St. Louis, Mo., for four pairs of rolls; from H. Herman & Co., Highland, Ill., for one pair of rolls; from John Heffner, McConnelstown, Pa., for one pair of rolls; from Hoover & Bonham, Halstead, Kansas, for four pairs of rolls;

**NEWS.**

A PART of the Clam River dam, owned by A. M. Chase at Stillwater, Minn., was blown up by a dynamiter on the night of June 7. Damage about \$6,000. The dam will be rebuilt as soon as possible.

A \$3,000 bonus will be given for the erection of a roller mill at Shoal Lake, Man.

CITIZENS of Killarney, Man., are trying to raise a \$5,000 bonus to secure the erection of a large roller mill at that place.

THE erection of a roller mill is contemplated at Lariviere, Man., on the southwestern branch of the C. P. R. R.

450,000 acres have been sown to wheat in Manitoba this year.

BURNED, June 12, the flour mill of the Oconto Co., at Oconto, Wis.

make a complete roller flour and corn meal mill on the Case system; from G. W. Freeman, Mansfield, Mo., for two pairs of rolls, one centrifugal reel and other machinery; from Williamson Bros., Watseka, Ill., for 16 pairs of rolls, and all other necessary machinery and appliances for a full fledged roller flour and corn meal mill on the Case system; from J. W. Grier, Harmonsburg, Pa., for two pairs of rolls and one No. 1 single purifier; from Flenniken Turbine Co., Dubuque, Iowa, for one No. 1 double purifier for A. M. Stratton, Boscobel, Wisconsin; from C. Corbett, West Washington, D. C., for two No. 1 special purifiers for Strecker & Thompson, Marietta, Ohio; from A. L. Strong Co., Omaha, Neb., for 10 pairs of rolls, one special purifier, one-half reel chest, one-fifth reel scalping chest, for W. C. Galoway, Neligh, Neb.; from Northrup Bros.,

from Kidwell & Goode, Ellwood, Ind., for two additional pairs of rolls; from Yaeger Flour Mill Co., Carlinville, Ill., for two No. 1 special purifiers; from J. W. Kirkpatrick, McGregor, Texas, for 10 pairs of rolls and all necessary machines and appliances for a full roller mill on the Case system.

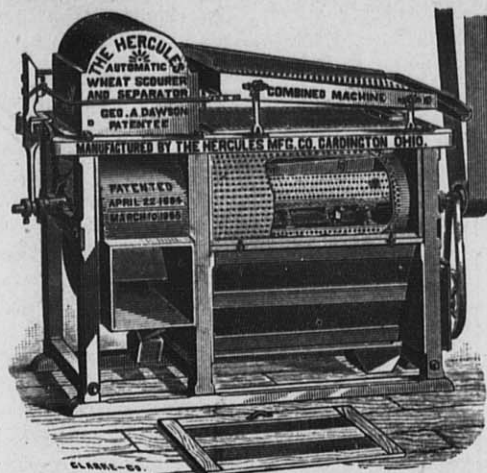
R. COMBER is reported to have purchased the flour mill at Selkirk, N. W. T., and will fit it up at once.

GEN. W. W. Belknap has purchased the Pembina mill at Hokah, Minn.

BURNED, June 9, Peavey & Co.'s elevator at Jordan, Minn. Loss on elevator \$20,000. Thirty-five thousand bushels of wheat were burned or damaged.

THE flouring mills at Fergus Falls, Minn., are running day and night, turning out about 3,000 barrels of flour daily.

Do You Want Clean Wheat?



THE Hercules Automatic Wheat Scourer AND Separator

Warranted to improve the **COLOR** and **VALUE** of flour in any mill. Anti-Frictional, Light Running and the only **AUTOMATIC WHEAT SCOURER** ever invented. Adjusts itself while in motion to the volume of wheat fed to it and requires no attention but oiling. Awarded **GOLD MEDAL** and highest honors at the late **WORLD'S FAIR, NEW ORLEANS**. Machines sent on 60 days trial and satisfaction guaranteed or no pay. Write for Circulars, Testimonials and Samples of Cleaned Wheat and Scourings.

THE HERCULES MFG. CO., Cardington, Ohio.

IT HAS INCREASED OUR TRADE.

THE HERCULES MANUFACTURING CO., Cardington, Ohio.

Gentlemen:—We like the "Hercules" machine very much indeed. It has increased our trade, and we will buy another for our other mill in the Spring. It certainly is the best Scourer we know of.

[Mention this Paper when you write.]

SCHREURS BROS.,
PROPRIETORS OF YOUNG AMERICA ROLLER MILLS,
Muscatine, Iowa, December 9th, 1885.

SCHREURS BROS.

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The only thoroughly practical work on Modern Milling in the English language designed for the use of operative millers only.

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Gradual Reduction Milling.

Contains 429 pages, many cuts, and diagrams for a 100-barrel mill, 70-barrel mill, a 50-barrel mill, and a 500-barrel mill. Full of interesting and valuable matter. Publisher's price \$3.00. Will be furnished with the United States Miller for \$3.50, postage prepaid. Send in your orders at once to

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Publisher UNITED STATES MILLER, Milwaukee, Wis.

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Provisions and Grain
BALTIMORE, MD.

Sell on Track West and to Arrive.
Fine Storage Cellars for Meat and Lard.
Handle all kinds of Grain.
Liberal Advances on Consignments.

REFER TO Western National Bank, Baltimore; Citizens' National Bank, Baltimore; Wm. Ryan & Sons, Dubuque, Iowa; Whitmore Bros., Quincy, Ill.; Bloomington Pork Packing Co., Bloomington, Ill.

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On the Chicago Board of Trade.

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We give special attention to the purchase and sale of grain or provisions, for future delivery, here or in other markets.
Information regarding the present condition and future outlook for prices furnished on request.

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WM. GRIFFITHS. JAMES MARSHALL. GEO. E. DODGE.

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GRAIN :: COMMISSION
MINNEAPOLIS AND DULUTH, MINN.

Orders for Choice Milling Wheat Given Special Attention.

FLOUR :: BROKERS

MILLERS DESIRING TO SELL FLOURS BY SAMPLE in car lots in the cities of Baltimore, Md., or Washington, D. C., should communicate with P. H. HILL, Millers' Agent, WASHINGTON, D. C., and for Philadelphia, Pa., communicate with HILL & SCHAAF, Millers' Agents and Grain Brokers, 219 North Broad St., PHILADELPHIA, PA. Highest references.

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GRAIN AND PROVISIONS.

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Market Reports furnished to correspondents.



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(Formerly Examiners U. S. Patent Office.)

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MILWAUKEE, WIS.

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UNITED STATES MILLER.

PUBLISHED MONTHLY.

OFFICE No. 124 GRAND AVENUE, MILWAUKEE.

Subscription Price\$1 per year in advance.
Foreign Subscription.....\$1.25 per year in advance.

MILWAUKEE, JUNE, 1886.

ANNOUNCEMENT:

WM. DUNHAM, Editor of "The Miller," 69 Mark Lane, and HENRY F. GILLIG & Co., 449 Strand, London, England, are authorized to receive subscriptions for the UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year. SEE COMBINATION OFFER ON OTHER PAGES.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices, where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

EDWARD ATKINSON, in an article in *Bradstreet's*, calculates that an eight-hour law would only affect one in ten among all the workers of the country, the other nine-tenths being engaged in occupations in which shorter hours are impracticable, as farming, herding, fishing, carrying, including all railroad employment, and so on. He also shows, what is apt to be overlooked, that the gains of capital have decreased, while the wages of labor have advanced and the cost of living has been reduced.

We will send the U. S. Miller and American Miller for one year for \$1.50.

The series of Great American Industries in *Harper's Magazine* is continued in the coming number by an article on sugar. The subject is most thoroughly handled and copiously illustrated. The author, R. R. Bowker, has gathered material from the most eminent and recent authorities. Beginning with a brief history of sugar, he shows its enormous production at present, describes the Louisiana plantations and their work, and the mysterious processes of the great refineries. Beside the sugar-cane, sorghum, beet, maple, and glucose sugar are carefully treated. The wonderful chemistry of sweets is unfolded as well as the secrets of candy-making. The paper is a compendium of valuable information.

The June Century Magazine is particularly rich in illustrations. The frontispiece is a fine engraving from Houdon's bust of Benjamin Franklin, accompanying a most interesting chapter of the unpublished letters of the distinguished philosopher. A fascinating illustrated paper is "A Literary Ramble," by Austin Dobson, descriptive of the Thames from Fulham to Chiswick. Mrs. Van Rensselaer's second paper on "American Country Dwellings" is exquisitely illustrated, and the war

papers on the Antietam campaign are the most interesting that have appeared. There are two or three short and taking stories beside the serials.

We will send The Milling World (weekly) and the U. S. Miller for one year for \$2.00.

ERASTUS WYMAN, President of the Staten Island R. R. Co., says that the result of the passage by the House of the Staten Island Bridge bill will be to lessen terminal charges in New York harbor 25 per cent. on all Western and Southern produce; that the bridge which the bill authorizes will be commenced within sixty days, rendering available ten miles of water front in New York harbor now inaccessible by rail, and that a revolution impends in regard to the shipment and storage of grain, flour, cotton and provisions of a very significant character for the West and South. The Baltimore & Ohio officers are greatly pleased at the result, and grateful to the western and southern members for their hearty support.

We will send the U. S. Miller for one year and Ogilvie's Handy Book for \$1.00.

A DULUTH correspondent says that a leading grain operator of Chicago is about to establish a branch office in Duluth for the handling of wheat and corn, the latter especially. The gentleman (Mr. P. Weare, we believe) thinks that Chicago has lost her supremacy as a grain market forever, and that Duluth will take her place. He seems to fear that the same reasons which have worked against Chicago as a wheat market will eventually kill her as a corn market also. He says that Chicago commission men had for some time seen their legitimate wheat business slipping through their hands and going to other places, and it was likely that, unless they exerted themselves, their corn business would go, too. For himself he did not mean to sit still and see the corn business going to other hands, and for that reason he was disposed to open up a house in Duluth. He has several million bushels of corn in Iowa, a good deal tributary to Duluth via the Omaha railway, and it is his idea that a market can better be found for corn through Duluth than by sending it to Chicago. There is a good demand for corn here, but no commission house to work up the business. Firms here and in Buffalo and Montreal say they are ready to buy corn here for shipment east and to Europe if they could do so, but they are not ready, nor do they desire to send men to Iowa farmers to buy directly from them. What is needed to develop the corn trade here is a number of commission houses to work up the shipment. Prices will range here about the same as to Chicago, with equally good freight rates, while the northern water route is preferable for shipment. The efforts of the Omaha and the St Paul & Duluth, with its connections south and southwest, to start corn this way are hopeful indications of the building up of the market here. The completion of the Minnesota & Northwestern to this city will also materially help this trade.

We will send you a copy of "Leffel's Construction of Mill-dams, and Bookwalter's Millwright and Mechanic," and "The U. S. Miller, for one year for \$1.30. Don't miss it.

DULUTH shippers are having more trouble in regard to grain shortages at Buffalo. Several shortages have been reported, the last being one of 750 bushels in the cargo of the propeller R. P. Ranney. The question was taken into the courts last fall at Detroit, and the decision was that the vessel was not liable for shortage if she delivered all she received. The owners of the Ranney will refuse to make good this shortage, and the case will go into the courts but the decision above referred to will save them. The question then comes as to who is liable. From conversation with grain men it is learned that it will be hard to establish the fact that all that was weighed got into the vessel. The elevators are not liable, for the state weighmaster's force weighs the grain into the vessels. The system is that the weighmaster or representative tallies the weighing. In this state of affairs it will be pretty hard to determine who will be held liable for the shortage.

THE Knights of Labor propose some queer ideas. They would have Congress establish a fixed rate of interest for money, and establish offices for loaning money to the people. The rate of interest on money will always be in proportion to the demand for it, and a system of government loan offices is highly impracticable.

FOREIGN ITEMS.

THE Bengal Government will hereafter publish monthly crop reports. The first crop selected for report is jute.

THE review of British and Continental crop prospects from the *London Economist*, deserves attention. The conclusion arrived at is of the highest importance to our own farmers, namely, that on the whole the harvest in Europe is nothing like as good as it was at this time last year, though still moderately hopeful. Not only this; Australia and New Zealand have had the worst harvest on record; and though "India and the River Plate countries have been favored with abundant wheat crops, unless America brings up the average by producing abundantly, the chances are that the world's wheat crop will be smaller than that of last year."

THE Canadian Pacific R. R. Co. will build this season an elevator having a capacity of 250,000 bushels, at Montreal.

GRAIN STORAGE RATES.

The special commission of the Milwaukee Chamber of Commerce on the grain storage question presented their report to the Board of Directors, June 4.

It is one of the most important reports that has been made to the Board for several years. The object of the inquiry was to ascertain whether or not the grain trade of Milwaukee could be materially increased by a reduction in the rates of storage now charged by the elevator companies. A comparative statement is made from official sources showing the rates charged by elevator companies at the principal grain markets of the country. From these comparisons it is shown that Milwaukee, Chicago, St. Louis and Baltimore are the grain markets where the highest rates of storage are charged, amounting to 15 cents per bushel per annum. Detroit, Toledo and Duluth are next in order, with an annual

storage of 10 cents per bushel per annum. New York 9½ cents; Buffalo, 8 cents; and Minneapolis, 7 cents per bushel per annum. The committee report having consulted with nearly all of the receivers of grain in the market and the uniform opinion was that it would materially increase and benefit the grain trade at Milwaukee to have the storage charges lowered and especially for the first ten days, and some of them expressed the opinion that there ought to be no charge for the first five days, in order to facilitate the marketing of the grain brought to market by the railroads.

The committee can see no good reason why higher rates of grain should be charged at Milwaukee than are charged at Minneapolis elevators per annum. The committee regards it as very poor policy to frighten buyers and shippers away from our market, by heavy storage and terminal charges. Milwaukee has not been on even footing with Chicago in relation to her coarse grain trade for years. More than 50 per cent. of all the grain received at Chicago is handled by track delivery, the only charge being for switching, which average only \$2 to \$2.50 per car load, while the average cost on such handling in Milwaukee is \$4 or \$5.

ECONOMICS OF MILLING.

READ BY C. M. PALMER, OF MINNEAPOLIS,
BEFORE THE MILLERS' NATIONAL
ASSOCIATION.

Contrary, perhaps, to expectation, I shall have very little to say about the economics of milling—those small details of manipulation which make a difference one way or the other of a few cents per barrel in the product of the mill. I take it for granted that all who listen to the reading of this paper, or all who may deem it worth their while to read it, are beyond the stage where I am able to instruct them in these matters. If such is not the case, they undoubtedly are out of their element and should seek some other line of business. It is only of the state of the trade in general, its relation to other lines of commercial industry, its domestic and international conditions that I would speak; and what I have to say will not long occupy your attention. It relates principally to the accomplishment of a few things, which may be summarized as follows: The cheapening of wheat, the lowering and equalization of freights, the protection of brands and an improvement in the method of selling flour and offals.

From this outline it will be seen that I propose to address you as business men, and not as craftsmen. The contrary seems to be the rule among contemporary writers in addressing what they term the milling trade, and ten years ago they would probably have been right, for ten years ago milling was looked upon rather as a trade than as a business. Of course there were a few striking exceptions to this state of things, but in the main the miller was a man who made flour with his own hands, by the skill of his own brain and made it in small quantities as compared with the production of the average mill nowadays. His principal thought, when he considered the interests of his mill, was how he could improve the quality of his flour, what machinery was best to use, what numbers of bolting cloth were best adapted to making

separations, and what these new fangled purifiers, which were then first being talked about, amounted to anyway. Of the rolls, he had scarcely begun to think at all. The question with him always was how he could make better flour than somebody else, or better flour than he had been making the year before. Now the situation is changed. The miller is a manufacturer of flour by the aid of skilled help and perfect machinery. He does not necessarily enter his mill once a week, but confines himself to his office and depends upon the best labor obtainable for the technical development of his business. His business is primarily and secondarily the selling of flour and the buying of wheat. (I place the two operations in the reverse order advisedly. For some time past those millers have made the most money who have first sold the flour and then bought the wheat from which to make it.) All that we have to consider now is how to make money—or perhaps I should more correctly say, how to lose as little money as possible. The art of making flour has almost reached the stage of perfection, and in it are engaged many laborers of the highest skill. It is possible to engage a miller of sufficient skill and judgment so that the entire workings of a large and complicated mill may be left entirely to his care, and his work judged by the results from day to day. In no other business has the manufacturer such a satisfactory check on his foreman as has the millowner. From week to week, almost from hour to hour, it is possible to know just what grade and what proportion of the different grades of flour are being turned out, and just how much raw material of a certain cost is being used to produce them. The modern and systematic flour manufacturer therefore, has a complete check upon his miller, and need not be imposed upon for one day, if the miller does not understand his work, or if understanding it, for some reason does not put his knowledge to practical use.

We have first to consider how wheat may be cheapened—for the reason that milling at the present time is not more profitable is not that flour is too low, but that wheat is too high. This is not paradoxical, although it may sound so. Flour, like every other product, has found its level; it is made in thousands of different mills in all parts of this country and in almost all others, and is well and economically made. Naturally its normal cost is that of the value of the raw material plus the cost of manufacturing and a reasonable manufacturer's profit. There are no secrets about it, and even if it were desirable, no adulteration is possible, because of its exceeding cheapness. With the milling capacity of the world greater than any possible demand for flour, it is evident that under all ordinary conditions of trade no fancy profit is possible. The most that can be hoped for is that the trade shall yield a fair profit and be kept from sudden fluctuations, and the periods of great depression that are so enormously expensive to those engaged in it, and which are almost entirely the result of speculative advances. These booms are made possible by the ignorance of the great body of Americans of this country to the markets of the world, and of the size and importance of the competition which it has in the business of wheat growing, and which render it possible for shrewd specula-

tors to persuade ninety-nine out of a hundred that because we have a short crop in a few states, gaunt famine stares Europe in the face, and that to be rich it is only necessary to buy and hold. It is the fashion to laugh at Indian competition, to sneer when the great Russian wheat fields are mentioned, and to gibe derisively at those who have anything to say about the large supplies of wheat and even flour from such far off regions as Australia, Persia, China, Africa and the South American States; but just the same these competitors exist and are growing stronger day by day. The value of wheat as a crop for opening up a new country is beyond that of any other grain, providing it is possible to grow it on the soil of the country. It can be planted on newly broken ground and tended and harvested with less labor, and meets with more ready sale at some price than almost any other cereal that can be mentioned. We have seen the enormous development of our country in the western and northwestern portions and the provinces of the Canadian northwest, not one-tenth of which would have been possible without the use of wheat as a staple crop. In Australia, India and Africa, and the other countries mentioned, there are vast fields either entirely uncultivated at the present time, or if cultivated at all, in such a manner and with such crops as will not long pay the cost of production. It is inevitable that as long as there is a sale for wheat, these places will produce it, unless it can be succeeded by a surer growing and more profitable crop. With all these countries, in many of which labor is exceedingly cheap, America has to compete. She is no longer the main dependence of Great Britain and the continent as a bread producer, but has many rivals. It has been conclusively demonstrated that we do not control the wheat market of the world, and that we cannot get our own price for our crop by holding it back and starving the European consumer. We must, therefore, if we would mill profitably, buy wheat cheaply, and this we cannot do if nine-tenths of the trade are always bulls on the situation, and therefore busily engaged in putting up the price on themselves. This is dangerous ground, however, and I will leave it as I feel it trembling beneath me, only saying as I withdraw my daring foot, that the miller, as the consumer of the raw material, has it in his power to make the price. If he does not take it, who will? Of what value is wheat if not to grind? If the milling trade entirely refuse to buy wheat next season, how many more bushels will be taken for export than have been taken this year?

Next in importance is the great freight question. During the year 1885 the tariff rate on grain and flour between Minneapolis and New York was changed nineteen times, and ranged from 25 to 42½ cents per 100 lbs. This does not take into account innumerable cuts of a more or less private or temporary nature, or any of the complications attendant upon a transit rate. From St. Louis, Milwaukee and Chicago, the changes were quite as numerous, and the fluctuations in some cases even more violent—as they have been from Minneapolis since Jan. 1, 1886. The danger in selling flour ahead at a prospective profit of perhaps 10c per bbl. when freights are liable to be advanced 15 or 20c per bbl. without warning, is obvious. But to

mention the evil without pointing out a remedy is useless, and therefore on this head I shall speak but briefly. Without attempting to discuss the Utopian dream of governmental ownership and control of all railroads, the good effect of which, should it ever be brought about, is problematical, it may be said that millers, as among the very largest producers of freight, can do much to keep rates uniform, which I think is fully as desirable as that they should be low—provided always that the rates are equitable. The disastrous effect of the rate slashing contests which have been so frequently indulged in is well known to you all. The spectacle of markets flooded with consigned flour, of buyers persistently holding off even when rates are at a merely nominal figure in the hope of still further reductions, is too familiar to all merchant millers to make it a pleasant subject to discuss.

The protection of mill brands and their more extended use is a hobby of the writer's, upon which he has probably written several hundred pages, and thus far, he must admit with but small show of practical results. Still, it cannot be denied that millers as a rule pay more attention at the present time to their brands than they did a few years ago. As a gentleman of ability and practical experience is announced to address you on the subject of "Flour Brands," it is unnecessary for me to enlarge here upon this matter, although an essay upon milling at the present day would be incomplete without some reference to the necessity of confining the product of the mill to as few brands as possible, and making sure that those brands will become familiar to the consumers of flour. It is not sufficient that the man who buys the flour at wholesale and sells at retail, or the commission merchant, should know where the flour is made; the end to be sought is that every consumer of a satisfactory package of flour should know exactly where it is made and by whom, in order that if he likes it he may be able to procure more of the same brand, even if the retailer from whom he purchased it is not handling the flour when he goes to obtain another supply. It is this demand from consumers that makes the reputation of the mill of value. I believe I do not place the figures too high when I say there are several brands of flour now made in this country that are worth to their owners from \$100,000 to ten times that sum; that is, that they each year pay in increased sales or in an increased price obtained under the certain brand, a fair rate of interest on the capital mentioned. It will be readily seen that if the miller can create such a valuable piece of property as this without in any way hurting his business or decreasing the amount of business done, and with very slight expenditure, providing it is made in the right direction, it is highly desirable that every miller who makes a satisfactory grade of goods should take a great deal of care to establish himself in the markets under his own name. The miller must select a good brand, one that is not used by any one else, copyright it, and then insist upon putting it upon every barrel of flour of that grade which he sells. Of course he can. The desirability of having as few brands as possible is very great. The business of selling flour is approaching the methods used in disposing of any other manufactured article. Advertising is necessary, and without judicious advertising it is very difficult to create

a brand having any great intrinsic value. I say this not because I am in the advertising business and have that commodity to sell, but because it is obviously true. The leading firms of the trade have found it to be so, and are practicing it and find their profit in it. I know that many large millers are spending from three to five cents in advertising for every barrel of their output, and this expense is being increased rather than diminished. It is thus that great public reputations are made, and in this age when advertising is almost the soul of business, it is useless to attempt to make your brand pay you an income unless you make the public so familiar with it that they call for it instinctively without stopping to consider what to ask for or whether a dozen other makes of flour may not be quite as good—which they undoubtedly are. Therefore I say, confine yourself to but few brands. It costs three times as much to make three of them household words as it does one, and your money or your courage may give out before you get the three established, when you may possess quite enough to establish the one, and in advertising you can not put your hand on the plow and look back. If you stop it before you have accomplished your purpose, ninety per cent. of your expenditure is wasted.

The doctrine that our exports of wheat should be in the form of flour is not new, but is none the less true and it is approaching realization year by year. The necessity for a bran compressor is more and more apparent as this end is more eagerly sought. We cannot afford to mill our whole wheat crop and sell all the offals at lower prices than they are worth in European markets; and to get them into those markets they must be compressed into the same bulk occupied by wheat and flour, and thus be transported at the same low rates of freight. This need was recognized by the Millers' National Association some years ago, and its offer of a reward of \$1,000 to the inventor of a successful bran compressor has been productive of considerable experimenting, some of it showing very good results. But the highest class of inventive talent has not yet undertaken the solution of the problem, and it probably will not until the demand for a device of this kind is more generally expressed by the trade at large. I have recently received a communication from a gentleman sent by one of the leading London newspapers into Ireland to investigate the causes of the great depression in agriculture existing there. He attributes a large portion of the present dullness in stock raising, the chief industry of the country, to the fact that heavy imports of American flour have closed a large number of the mills, and thus deprived stock growers of the cheap food for their cattle which mill offals had formerly furnished them. It is evident, therefore, that if we would keep these mills closed, we must send more of the offals as well as the flour. The demand exists beyond question, and it is only a matter of cheap package and low freight. These the natural tendency of the times must soon bring us, and the American milling trade will have gained a position in advance of that which it now occupies, and a trench nearer the citadel which we must capture.

In this connection is a matter of more immediate importance than the building up of an export trade in bran. I refer to the de-

sirability of our encouraging the use of bran as a food for cattle and horses in this country to a much greater extent than it is at present used; a use which I think will be found upon experiment to be fully justified by the result. About two years ago I was able to bring to the attention of the trade the experience of two prominent millers, one of Illinois and one of Minnesota, in the use of bran as food for working horses, their conclusion being that horses would stand heavy work and gain in flesh when fed only with hay and wheat bran. A few months ago I was able to present some facts regarding the use of bran instead of corn in fattening cattle and the matter has again been called to my attention in that connection by Mr. Crosby, who has just returned from Topeka, Kan., where he is interested in a milling concern. He there met Gilford Dudley, a prominent stock grower of that city, who has been experimenting for three years past with bran as a fattening food for cattle. Mr. Dudley's experience, and I am assured by Mr. Crosby that he is a careful, conservative, close figuring business man, is that, weight for weight, new process wheat bran cleaned as closely as the best milling appliances are capable of doing it, is equal to corn meal for fattening cattle for market. It should be borne in mind in this matter that the bran should be compared with other foods weight for weight, not bulk for bulk. Where 20 lbs of corn meal are given, an equal weight say about a bushel basket, of bran should be fed, which can be done at a saving of from 30 to 50 per cent.

As to the result of such feeding I have here copies of two letters from Mr. Dudley, obtained for me by Mr. Crosby, which I will gladly furnish to all who may desire them and which will appear for the second time in the current issue of the *Northwestern Miller*. Mr. Dudley's testimony (and remember that he is a plain, practical business man, figuring not for fancy results but to make a profit) shows that different lots of steers fed on bran and prairie hay made the highly satisfactory gain of 60 lbs the first month, 78 to 87 lbs the second month and in one case at least the enormous gain of 140 lbs in 30 days. What gives value to Mr. Dudley's experiments is that he uses and prefers the bran from the best class of roller mills, and as free from flour as it is possible to make it. We all know that as a milk producer bran stands high in the estimation of practical dairymen, but what we propose now is to increase its consumption very largely by demonstrating its value as a flesh former. Without going into the chemical features of the question (some of which are indicated in Mr. Dudley's letters), in search of a reason for the value of bran for this purpose, let us practically test it, every miller in his own neighborhood, and see if it is not possible to create a larger demand for it here at home, and still have the great foreign market in reserve. We shall thus increase the material wealth of the country, and if we succeed in increasing the demand for bran only enough to raise the price two dollars per ton, we shall benefit the milling trade to the extent of about \$4,700,000 per annum, a sum sufficient to pay an annual profit of about three and one-fourth per cent. on the entire capital invested in the milling business according to the census of 1880.

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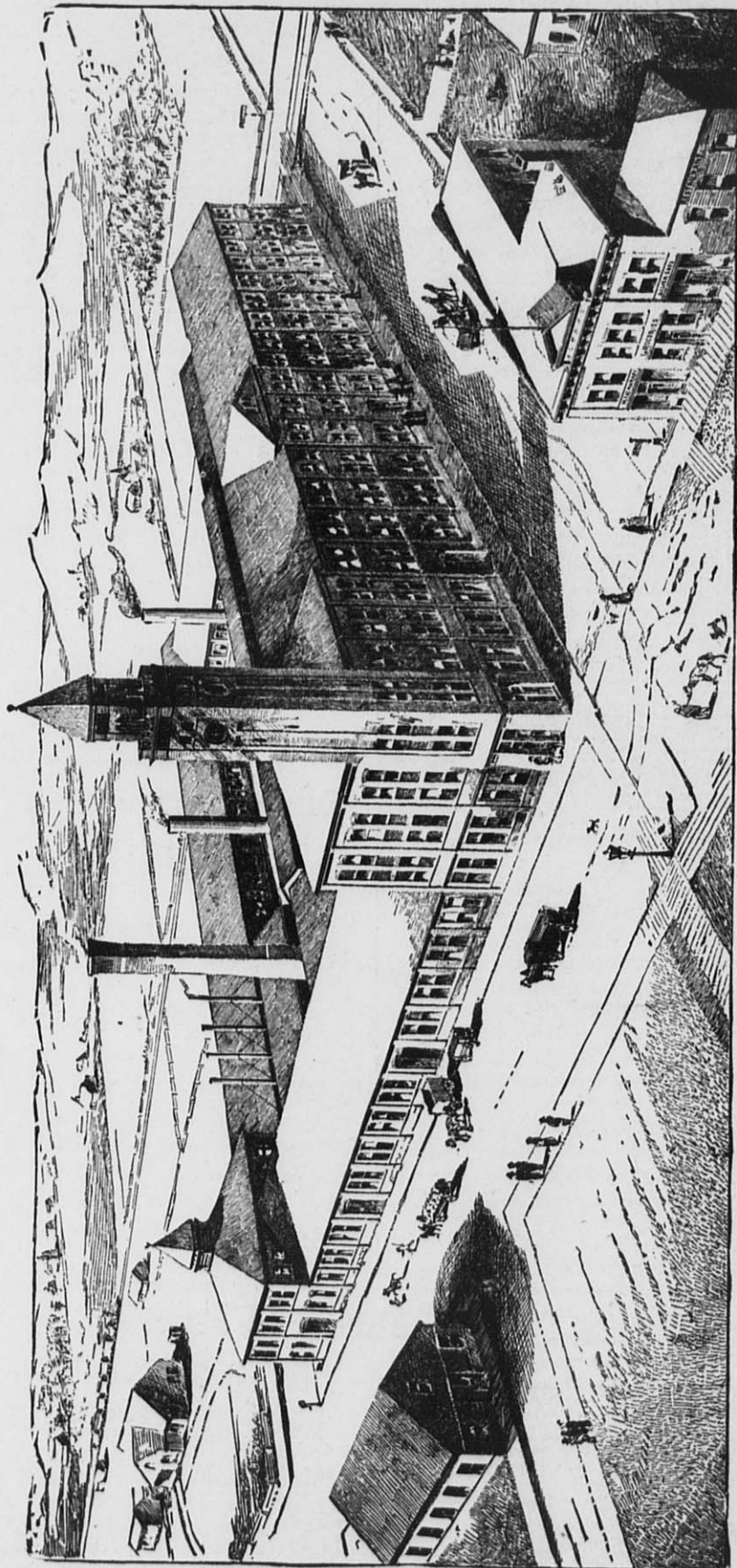
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THE NEW PHOENIX IRON WORKS AT ST. CLOUD, MINN.

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(CONTINUED FROM PAGE 43.)

is like Dead Sea fruit, that turns to ashes on the lips of him who plucks it."

As to wool and its protection. In October, 1885, in response to Secretary Manning's circular the National Association of Wool Manufacturers recommended:

"That there shall be no change at present in the existing wool and woolen tariff, nor a general tariff-revision at the next session of Congress."

This plea, not only for the continued protection of wools, but for the protection of the wool-grower, was signed by nine hundred and fifty-four mill owners and corporations, representing four-fifths of the card-wool manufacturing capacity of the United States, and the labor of 116,000 operatives.

At an unusually large meeting of the Executive Committee of the National Association of Wool Manufacturers held in Boston, April 15, 1886, it was resolved:

"First. That we are unalterably opposed to the Tariff Bill reported to the United States House of Representatives, April 12, 1886, so far as it relates to wool and woolens.

Second. That the greatly increased importations of worsted suitings and worsted yarns in the last twelve months have displaced the use of many millions of pounds of Ohio and other American wools; that those increased importations were caused by too large a reduction of the duty on these goods by the tariff of 1883, the extent of reduction being strenuously opposed at that time by the officers of this association.

Third. That we regret the substitution of this large amount of foreign wools and woolens in place of those of American production."

G. H. Parker, of Detroit, the leading wool dealer of Michigan and a strong democrat, (see *Chicago Tribune*, May 16, 1886), says:

"I do not believe they will dare to pass the Morrison Bill, because there are so many western congressmen who would be pulverized at home if they should vote for it. There will be no fooling with such men. They will all be left at home, even if democrats have to vote for republicans to do it. I am a democrat, but I cannot stand this sort of thing. There has been a tariff on wool since 1824. Under that tariff the entire industry has been built up. With its removal the industry will be broken down."

I have before cited the case of Sunset Cox, one of the strongest democratic free-traders in the country, who, seeing the evil effects of the reduction in 1883 of the tariff on wool, woolens, etc., introduced a bill in Congress to restore the tariff. A recent number of the *New York Dry Goods Chronicle* says:

"We know of one of the largest houses in cloak manufacture in the United States, formerly employing from 400 to 600 hands the year round, who, in consequence of tariff changes in 1883, gave up this department of their business entirely, and now handle only foreign cloaks. As a result the hands were thrown out of employment and about \$5,000 in weekly wages ceased at once."

What becomes of Mr. Bates' statement, that:

"The manufacturer of woolens does not hesitate to express his ability to hold his own against the world if he can have free wool. Give him free wool and he will be a bigger customer for domestic wool than ever before."

As to Senator Frye, Mr. Medill's own statement in the *Tribune* shall speak for itself:

"Free trade with Europe! It will do to talk about. Men can write whole volumes describing its advantages. The newspapers can be filled, * * * showing what a marvellous contrivance it is, and pointing out its beauties, until we are all enraptured with it. But when we come to try it, when we apply it to American industry, it has the same effect on business that the cholera has upon public health." (Joseph Medill, in *Chicago Tribune*.)

Senator Frye's eulogy on the "beneficence of the principles of the legislation which created the tariff" is not in conflict, but in harmony, with what Mr. Medill said on the same subject in the *Tribune*, headed:

WHAT THE PROTECTIVE TARIFF OF 1861 HAS DONE.

"I might draw a picture of the financial prostration of the country from 1857 to 1861, caused by another embrace of British free-trade, which brought poverty, bankruptcy and wide-spread distress, but it is of so recent occurrence to those who begged for work at 50 cents per day, to keep soul and body together. But, on the other hand, see what the tariff of 1861 has done for the country. It revived business as if by magic, relighted thousands of furnaces, started thousands of idle mill wheels, and infused new life into all kinds of business. In the first year of the war we had hard work to equip our comparatively new army. We could not arm or clothe them properly and were badly beaten. Second year we did better; we improved our blockade, increased our armies, built ships, manufactured cannon, rifles, swords, powder, leather, hemp; set all the people at work; invented new labor-saving machines for the farmers, so that the old men could send all their sons to the war and feed them.

Third year, as we enlarged our mechanism we gained in power prodigiously; met reverses heroically, and quickly repaired them.

Fourth year, perfected our blockade, and sent to the field a million of well-armed, well-fed, clothed and paid soldiers, and crushed the whole rebellion into the earth. Our mechanism triumphed. Our artisans were the vulcans who forged the thunderbolts of victory. The Morrill tariff protected them from a British fire in the rear. Hence the deadly animosity of all copperheads against that "prohibitory" tariff, for it prohibited their rebel friends from destroying the Union and perpetuating slavery."—(Joseph Medill, in the *Chicago Tribune*.)

Mr. Bates asks:

"Did it ever occur to the reader that under the highest tariff the country had ever known, the condition of the laborer is most unsatisfactory?" As the tariff was lowered in 1872, and again in 1883, how abjectly ignorant must be the author of such a question.

I again quote Mr. Medill, in the *Chicago Tribune*, as applying to Mr. Bates' reckless reiteration of false statements, though frequently disproved. Mr. Medill said:

"It is probably useless to follow and refute the statements of a writer who runs round and round in the same circle, repeating an assertion as often as it is proven false or absurd. Facts and reason are lost on such an opponent, for if you show him that the facts are against him, he will coolly turn round and tell you, 'So much the worse for the facts.'"—(Joseph Medill, in the *Chicago Tribune*.)

I particularly commend to Mr. Bates' careful perusal the following extract found in the "Protectionist's Catechism," written by Mr. Medill in the *Chicago Tribune*:

Q. What effect would such a reduction of the tariff have on the wages of labor and business of this country?

A. A most disastrous effect. The scenes and experiences of 1835 and 1857 would again be witnessed and endured. Like causes produce like effects.

Q. What would happen between the manufacturers and their workmen?

A. A desperate struggle would immediately ensue between all employers and employees. The former finding themselves undersold by the foreign capitalist, whose wares were made by cheap labor, would reduce the wages of their hands down to the European standard of compensation or near it. The workmen refusing to accept such wages would 'strike,' and would hold out until starvation drove them to take what they could get. The employers would shut up their shops, and wait for everything to fall to the European level; they would sell off what stock they had on hand to pay their debts, and many of them

would fail, and their establishments would be sold by the sheriffs for what the property would fetch. Meantime foreign goods would pour into the country in increasing quantities, and every dollar of gold that could be raked up would be shipped to England to pay for the "cheap goods." Gold growing scarcer each day, would enhance in value, and currency would depreciate. Thousands of merchants would fail; travel and transportation on the railroads, canals, rivers and lakes would fall off. For a long time multitudes of idle men would be seeking for employment.

Q. How would the price of farm products be affected by the crash in the cities and towns?

A. The home market for farmers products would be all shattered to pieces. The prices of vegetables, poultry, eggs, butter, cheese, hay, fruit, fresh meats, garden-stuff, in short everything that would not bear transportation to Europe would become unsaleable or if saleable, would bring but small prices in "store trade."

The same blow that struck down mechanics' wages would fall with stunning weight upon the heads of farmers. The English demand for their breadstuffs and salt meats would not be increased a particle, unless they undersold the other food-exporting portions of Europe. But as they reduced their prices, so would the Russians, Poles, Prussians, Irish, French and Canadian farmers, all bidding against each other for the supply of the easily gluttoned English markets. (Joseph Medill, in the *Chicago Tribune*, Mr. Bates' own witness.)

In conclusion, I quote from a free-trade pamphlet published in England, and widely circulated:

"Let it be understood once for all, that the salvation of England depends upon the destruction of American manufactures, and that THE ONLY POSSIBLE WAY IN WHICH AMERICAN MANUFACTURES CAN BE DESTROYED IS BY FREE TRADE."

JOHN W. HINTON.

[This discussion may now be considered ended, so far as the series of BATES-HINTON letters are concerned.—Editor.]

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Issue of May 4, 1886.—No. 342,121, grain separator, D. Young, Stockton, Cal.; No. 341,134, centrifugal reel, W. R. Dunlap, Cincinnati, Ohio; No. 341,159, automatic grain weigher, N. Morrison, Hoosick Falls, N. Y.; No. 341,342 roller mill, C. H. Morgan, Buffalo, N. Y.

Issue of May 11, 1886.—No. 341,439 feed regulator for grinding mills, W. P. Allen, Wyoming, Ohio; No. 341,546, grinding mill, F. Beall, Decatur, Ill.; No. 341,814, grain separator, C. C. Murphy, Le Sueur, Minn.; No. 341,818, grinding mill, J. H. Russell and A. W. Phelps, Springfield, Wis.

Issue of May 18, 1886.—No. 341,880, flour bolt, M. W. Clark, Parma, Mich.; No. 342,026, wheat granary, J. W. Marker, Zane, Ohio; No. 342,146, flour bolt, O. H. Titus, Wilmington, Del.; No. 342,158 crushing and grinding mill, J. F. Winchell, Springfield, Ohio; No. 342,163, rolls for grinding mills, J. B. Alfree, Cumberland, Md.; No. 342,230, apparatus for purifying grain, G. T. A. Niederer, Germany; No. 342,283, bolting reel, and No. 342,284, brush for bolting reel, H. P. Cavanaugh, Adrian, Mo.; No. 342,311, crushing and grinding mill, J. F. Winchell, Springfield, Ohio.

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(CONTINUED FROM PAGE 41.)

flour, and increase the quantity of low grade, as well as lowering its quality.

The action of a 6-sided reel on any material, no matter whether it is covered with a wire or silk cloth, has the same feature of scouring off objectionable matter that a reel of gentler action would not scour off; but a wire covering is far worse than silk.

The time to clean your wheat, gentlemen, is before the reductions commence. The scouring action does not end with the wheat-break scalp: it is carried on through the other reels in scalping out your flour from the middlings; and even in rebolting flour on a 6-sided reel, the scrubbing action is still going on, caused by the weight of the flour falling in bulky, intermittent masses. Open the doors of your bolting chests, and listen to the thump of the falling flour inside the reel. It falls from the discharge of each rib the entire length of the reel, about three falls per second, with a swash, swash, swash, thump, thump, thump. This action in a reel is all wrong in principle as well as practice, but we have managed to get along with both the action and principle for a long while, the same as we formerly got along with our slow stage coaches. The question is not "whether 6-sided reels will do the work," for we know they will. The question is "what other system will do it better?" Will a system of centrifugal reels do it?

We will look briefly into their fundamental principles, and see whether they are legitimate. It is hardly necessary to describe their construction, further than to say that they contain an open cylinder of flyer blades, rapidly revolving within a slowly revolving hexagon, octagon or round cylinder of bolting cloth that is traveling in the same circumferential direction.

There are probably from 20 to 30 different manufactures of centrifugal reels in this country, all embodying the same general principle of revolving flyer blades, but varying in the number of blades anywhere from 4 to 40, and ranging in revolutions from 100 to 250 per minute, a very liberal range in number of blades and revolutions, we must admit. But, nevertheless, they are facts.

The principle of this invention lies solely in the combination of the flyer blades revolving rapidly within a cylinder of bolting cloth. The man that first applied this combination is the inventor. All others from that day to the present that claim to have invented a centrifugal reel, have only applied well known mechanical devices in some jim-crack manner to make their pretended invention different in its mechanical construction from that of the other fellows, but they have all stuck perniciously to the original noxious flyer blades, simply because it is easier to imitate than to originate. Now, with all these different constructions, what can they do wholly in a system of flour dressing? Can they be used as wheat scalp:ers from your different reductions? No, their scouring action is too severe: they would make too much break flour and ruin it with the bran scourgings. So these facts kill them in the first step of the system, but bear in mind the hexagon reels will do wheat-break scalping.

Can centrifugals be successfully used as scalp:ers to scalp the stock from the wheat break scalp:ers? No, they can not for the reason they would wear out silk bolting cloth

every day, and they can not be made to send the tailings out dustless, as their action is so severe that they are constantly scouring and reducing the middlings to flour clear to the end of the cylinder. So we see they are no good for the second step in the system, but will bear in mind that hexagon reels will do the work.

Can centrifugals be used for grading your middlings? No, they can not. They scuff and scour too much flour off that goes with each grade to the purifier and is pulled into the dust room.

That condemns them for the third step in the system; again don't forget that Hexagon Reels will grade your middlings.

Will they answer for bolting crushed, or sized germ, or coarse middlings from smooth rolls? No, they are too severe on that stock, and break up the partly flattened germ too much. So they are not fit for the fourth step in the system. We again call in the hexagon reels that we know will do it.

Can they take the crushed middlings chop of any grade of middlings from smooth rolls and bolt the flour out, and at the same time make a clear, defined cut-off, and send the tailings out dustless? Or can they use a place of coarse tail cloth of proper mesh to make a separation of fine middlings and even then send one that could do it. A hexagon reel will. The reason why the centrifugal will not, is simply from the following comprehensive and scientific facts:

All flyer cylinders are simply formed with a series of long, narrow fan blades, and the flyer cylinder is simply a long fan. Now it is a well known mechanical law that when you revolve them, they will discharge the air from their center outward in every direction from the axis around which the fan blades revolve.

It is another well known law that all fans discharge their strongest current right at the center of the fan; and it is another well known law that there is nothing gained in volume of air discharged from a fan after it reaches a certain width of face, or in other words, a fan 8 inches wide, running 200 revolutions, the speed of many of the centrifugals, will discharge just as much air as if it were 12, 20, or 80 inches width of face. The air rushes along inside of the open center formed by the flyer blades until it reaches the longitudinal center midway between the ends of the flyer cylinder, until it has a compact volume strong enough to overcome the surrounding atmospheric pressure. It then discharges its air out in volumes according to revolutions and depth of the fan or flyer blades. Now, this discharged air has to be supplied from some source, and as the ends of the reel are closed, where can it get in to fill the vacuum? It is compelled to use its own air, and that air has to be supplied from the discharged air, and that discharged air has got to travel back from the center each way toward head and tail of the reel; and as it can not get into the center around through the ends of the reel, it forces its way in through the flyer blades. As the flour and middlings, or whatever is being bolted by the reel is heavier than air, it is slammed out against the cloth with great force. Now, these return currents of air are carrying fine, light flour back each way from the center, and as it is in a more rarified air at the tail, it is dropped down into the cut-offs. This

very fact of not being able to make a clear and defined cut-off alone condemns them for any spot or place in a scientific system of bolting.

I thank you, gentlemen, for your attention.

FACTS ABOUT THE UNITED STATES.

Some of the facts and figures which Mr. Carnegie cites in his "Triumphant Democracy" are "stunning." For instance (picking up points at random), that the United States contains more English-speaking people than all the rest of the world; that the wealth of the republic exceeds that of Great Britain; and that it also surpasses the mother country not only in agriculture but in manufactures; that for every pauper in the United States there are twenty-one in Holland and Belgium, and six in Great Britain and Ireland; that seven-eighths of our people are native born; that 22 per cent. of them now live in towns of 8,000 or more inhabitants; that if the live stock in our country were marshalled in procession five abreast, in close order, the line would reach around the world and overlap; that Chicago alone makes half as many steel rails in a year as Great Britain, and Minneapolis turns out so much flour that the barrels would form a bridge from New York to Ireland; that we produce sixteen pounds of butter annually for every man, woman and child in the country, and if our crop of cereals were loaded in carts, it would require all the horses in Europe, and a million more, to move it; that more yards of carpetings are manufactured in Philadelphia than in all Great Britain; that a single factory in Massachusetts turns out as many pairs of boots as 35,000 boot-makers in Paris; that our government has given us more land for the support of schools and colleges than the entire area of England, Scotland and Ireland.

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AN IRISH EPITAPH.—

"Here I lies, wid my face to the skies,
And my mind entirely at aise is;
Wid the point of my nose, and the tips o' my toes
Turned up to the roots of the daisies."

LANCELOT ON MECHANICS.—"Lancelot," asked Elaine, looking up from the *Eagle*, "how do strikers 'kill' an engine? I can't understand it at all."

"Easy as lying," replied Lancelot, promptly. "You just climb over the tail-board into the cab, open the blow-off cock, by lowering the connecting-rods until the crank-pin is level with the cross-head of the fulcrum connections, push in the brass throttle-ratchet till it reaches the crown sheet, which lets the water-glasses fall into the fire-box—"

"Oh, now I see," she said, joyously, "and of course that puts out the fire. But, Lancelot, if I knew as much about engines as you do, I wouldn't stand at the ribbon counter another day. I'd just go out where the strike is and be president of a railroad myself."

And Lancelot kissed her and said he would, just as soon as his new tennis suit came home.—*Boston Post*.

"I DON'T see why pennies were invented," said a New York banker, who had received a few in change.

"Oh, that's easily accounted for," remarked a friend from an adjacent city; "pennies were invented to enable New York millionaires to contribute towards the erection of public monuments."—*Boston Globe*.

"No," said the unsalted youth, "I don't intend keeping a regular diary. I only want a book in which to set down my daily thoughts."

"Ah! I understand," replied the intelligent shop-keeper; "then, of course, you want a much smaller book than this."

"WHEN should a young woman marry?" asks a writer. After a careful consideration of this subject we have come to the conclusion that they should marry when they get a chance.—*Burlington Free Press*.

"If spring poets were hens," says an exchange, "even an editor could afford to eat eggs." Doubtful. If spring poets were hens they would not send their lays to the editor.

SURPRISED AT THE BATH.—One of the Bancrofts lives over at San Rafael. Even the terrible loss that he sustained in the big fire cannot make him forget his wife's conduct and the scare she gave him. He had gone across the bay early in the afternoon of the day the fire took place, and reaching home he turned in to take a nice warm bath and fix himself for a comfortable evening. While he was in his bath a telegram came over. His wife opened it. It read:

"The house is on fire."

She rushed to the door and called him in wild excitement. From the interior came amid splashing and dashing:

"What's the matter?"

"The house is on fire!"

"Jerusalem!"

There was a wilder splash, and a figure sprang out of the door and rushed madly out, with a bath towel around him and dripping with water.

"Where? Where?"

"It's the store, my dear, in San Francisco."

The reaction perhaps saved him from imagining the reality until he got to town.—*San Francisco Chronicle*.

BOBBY was very much impressed by the remark of the minister at church that man was made of dust.

"Ma," he said, after a thoughtful silence, "was I made out of dust, too?"

"Yes," she replied.

"Well, how is it, then, that my birthday comes in January? There ain't no dust in January."—*Harper's Bazar*.

MANY times a boy would gladly run away and go fishing Sunday if he could only get his father to thrash him in the morning before he sets out; then, he could enjoy the whole long day without a pang. But when he has to wait till evening for it the dread of that unknown ill that awaits him clouds all his skies and pitches all his songs in minor keys.—*Burdette in Brooklyn Eagle*.

CLOSED HIM OUT.—It is reported that the last murderer swung off in Ohio went to his death feeling that the sheriff had not used him exactly square. The condemned had a deal in wheat through outside parties, and he wanted just one more week to close it out.

"Of course, I'd do anything for you personally," said the sheriff, "but the governor is behind this thing, and he seems to be in a hurry. I'll promise to carry out the deal for you, however, and whatever profits are made shall go into a gravestone for you."

The prisoner had to submit, but he was emphatic in asserting that the sheriff should consider business before pleasure.—*Wall St. News*.

THE SELLER SOLD.—Out in the country a note is a big thing. Country merchants take notes of farmers for supplies of groceries, and implement dealers acquire big boxes full of I O Us. In some sections of the West every thing is done by note, to be paid "after harvest." "Out in Western Iowa the other day," writes a correspondent, "I came across a country storekeeper, a German. I sold him a small bill of goods, and took his note for the amount. That note is as good as wheat. It will be paid on the very day it falls due. While I was there a man came in and said:

"Jake, did you sell your bay horse to that chap who pretended to be a lightning-rod dealer?"

"Yah," replied the storekeeper.

"Did you get cash for him?"

"Not von cent."

"Just as I thought. That lightning-rod peddler is a swindler. He has sold your bay horse for \$80 cash, and has skipped the country. You'll lose every cent of it."

"But Jake didn't seem to be alarmed. He laughed and chuckled, saying:

"Dot vas a good choke. He sell dot horse for eighty tollar, ven he pay me a huntert und vorty."

"But you have been cheated out of your horse; the man is a swindler."

"Sheated! Svindler! I guess not. Ain'd I got his note for a huntert und vorty tollars?"

THE LAWYER'S PRAYER.—A St. Paul clergyman relates the following incident:

"Some time ago, as the story runs, W. W. Erwin, the criminal lawyer, pressed for a little change, dropped into the office of D. W. Ingersoll and asked him for a loan of \$5. Mr. Ingersoll declined to make the advance, but suggested, that, instead, if Irwin would go into the basement with him he would pray for him. Mr. Irwin consented, and the two went into the depths, where on bended knees

Ingersoll prayed long and well for his brother man. When he had concluded, Erwin said: 'Now I'll pray.' Mr. Erwin's prayer was a peculiar one. It was delivered at the top of his voice, and consisted of an exhortation to the Lord to direct Ingersoll how to dispose of his vast wealth wisely. As he warmed up the pitch of his voice raised materially, and Mr. Ingersoll grew nervous and urged him not to pray so loud, as it would bring those up stairs down. It was of no avail. The exhortations grew more fervent, and finally became howls. Then Ingersoll, with a despairing exclamation, sprang to his feet and said: 'Stop praying Erwin, here's your \$5.' The devotions ended at once."

He had a cane, a pair of yellow gloves and eye glass. She had bangs, a bustle and an "English pug." They were married, and commenced house keeping. At the end of the first month the cane, yellow gloves and eye glass had been hypothecated for coal, the "English pug" had been stolen, and nothing left to carry them over another week but an old-style bustle and a dilapidated forelock. She returns to her mother, a sad but wiser woman and he to his pa, with an abundance of cheek.

THE DIFFERENT SPECIES.—

He who carries loads of stocks
In his safe or in his box,
And to hold them has the rocks
—That's a bull.

He who sells what he has not—
Knocks the prices, cold or hot—
Hopes the world will go to pot,
—That's a bear.

He who comes down every day,
Hits the market anyway,
Lies in wait for guileless prey,
—That's a broker.

He of cheek, and quite a fop,
Wages small, high life can't stop,
Blows his dust into bucket shop,
—That's a clerk.

Mr. Fresh (the silly "bloke"),
Who does his cash in Wall street soak,
And goes home later, flat, dead broke,
—That's a lamb.

—*New York Sunday Financial Journal*.

NEW YORK is talking about establishing a "home for weary women." It is just like the impudent assurance of New York to think it can successfully set up opposition to Heaven.

"WHAT are the natural products of Kentucky?" asked the teacher.

"Tobacker," yelled Tommy.

"What else?"

"Whiskey!" yelled Jimmy.

"What else?"

"Kurnels!" yelled Johnnie.

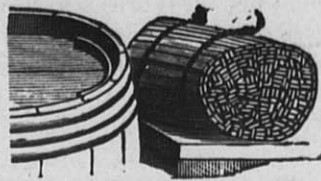
LADY—"Why, how do you do, Master Eugene? You did not forget me, did you?"

Master Eugene—"Oh, no; 'cause my sisters told me to be sure and call on you, for you'd not have any one else."

"THAT boy of yours is not adapted to the undertaking business," explained an undertaker to the boy's father, who enquired why he had been discharged.

"What's the matter with him?"

"He hasn't a realizing sense of what is due the afflicted. Day before yesterday Mrs. B. buried her fourth husband. I sent the boy up to learn at what hour she wished the ceremony to take place, and he asked her what her regular time of day was for burying husbands. I expect to lose her trade entirely."

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The grain is dried at the rate of about 1,000 bushels per hour, the automatic arrangements and low temperature used insuring evenness and uniformity. The capacity, however, can be increased in proportion to power and space afforded, these latter being the only limit. In addition to drying evenly, the operations of the very dry air, peculiar to this machine, remove from the grain any slight odor from sweat or heat, and put it in condition to grade. The air used is a prepared air, and has all the varied degrees of low temperature necessary. Damp grain made as rules of inspection require, or as dry even as old grain. Thus the BATES' DRYER is the most perfect as well as rapid dryer extant. It is beyond question The Champion Grain Dryer. Absolutely safe against fire.

New Corn can be made to grade immediately by the BATES' CHAMPION RAPID GRAIN DRYER. Corn of present crop, all over the country, is too damp to grade, and likely to be thus for months to come and can only be made to grade by artificial means. The BATES' DRYER is the only dryer that can dry the Grain in large quantities at trifling cost, naturally, and not show parch, shrivel, or other evidence of artificial drying; the drying by this method being precisely that accomplished by a natural dry atmosphere, only that the machine accomplishes in a very brief space of time what would ordinarily require months. It is not necessary by this process to dry out any more moisture than will bring the grain up to the desired grade.

Dryers for grains of all kinds, including Brewers' Grains, cotton seed, flax, and grass seeds, glucose refuse. Also for Phosphates, Starch, Glue, Fruit, Lumber, Shingles, and Veneering, Hides, Leather, Hair, Moss, Wool, etc.

THE BATES' FERTILIZER DRYER accomplishes about three times the work accomplished by any of its competitors with about one-quarter of the steam. Besides grinding and drying the offal, this dryer delivers it cold and ready for immediate shipment.

The expense of drying by this method is reduced to smallest possible cost, which is below that of any other. Machines are compact. Experienced workmen will be sent to set them up and instruct as to operating. For further particulars address,

J. C. BATES,

189 La Salle St., Room 73 Calumet Bld'g. CHICAGO, ILL.

P. O. BOX 585.

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ARE NOT
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THEY WERE
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INTERNATIONAL
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CINCINNATI, O
1880.

[Please mention this paper when you write to us.]

To Preserve Iron and Keep Boilers and Flues from Scaling, use

H. P. GRAVES' BOILER PURGER.

It has been practically demonstrated that a scale one-sixteenth of an inch thick on a Boiler will require twenty per cent. more fuel than a clean Boiler, while a scale one-fourth of an inch thick will require sixty per cent. more fuel. The scale is a non-conductor of heat, and its formation in Boilers is general through the United States, more especially in the lime and alkali districts, and enough attention has not been paid to keeping Boilers free from accumulations. The cost of fuel for steam purposes is an important item, and any system for economy in this direction should receive due consideration. I am manufacturing a BOILER PURGER which I claim is the best made: First.—That it will remove the scale from any Boiler, and, by its continued use, will keep it from forming. Second.—That it will not injure the Boiler, Valves or Cylinder, nor foam the water, nor injure the water for drinking purposes. It is easy to use, being in a liquid form, it can be put directly into the Boiler, through the Safety Valve, Whistle Valve, or by Force Pump, or into the Tank. Third.—That by its use, from fifteen to forty per cent. can be saved in the cost of fuel, besides the expense of putting in new flues every one or two years. Address, for prices, etc., to

H. P. GRAVES,

CHICAGO, 255 South Canal St.

MILWAUKEE, 343 Virginia St.

MINNEAPOLIS, 327 Hennepin Ave.

DETROIT, 36 Jefferson Ave.

[Mention this paper when you write to us.]

NEWS.

WEBSTER, Dak., is to have a new roller mill.

A FULL roller mill is being built by J. E. Jackson, at Ladonia, Texas.

J. B. ALLEN & SON have built a 50-barrel roller mill at Wahoo, Neb.

SIMONDS & JOHNSON of Stuart, Iowa, are succeeded by Harvey & Northrop.

HIGH water recently carried away the mill-dam at Jaretta, Minn., causing a heavy loss.

A BONUS of \$2,000 is offered by the citizens of Marcellus, Mich., to a party who will build a good roller mill there.

THE tornado which visited Attica, Ind., on the evening of May 12, caused a damage of \$2,000 to the City Milling Co. The engine house was almost wrecked.

A grist mill is to be built at Beulaville, N. C., by John W. Gresham & Co.

J. J. REIK has sold his grist mill business at Blissfield, Mich., to J. J. Keyfuss.

THE flouring mills at De Smet, Dak., have been purchased by M. E. Gilbert, who will change them to the roller system.

J. W. EGLOFF is building a 75-barrel roller mill at Valley Mills, Tex.

H. C. DUTTON is building a 100-barrel roller mill at Muir, Mich.

THE Advance Flour Mill Co. with a capital stock of \$15,000 has been incorporated at Carrollton, Ill.

FRANK W. REDDEN is building a 60-barrel roller mill at Denton Bridge, Md., and expects to have it in running order during the summer.

G. F. STRAIT & Co., of Shakopee, Minn., are rebuilding their mill. The new building will be 50x70 feet, five stories high, and of brick and stone. It will be an all-roller mill, with a capacity of 400 barrels per day, the motive power is to be furnished by steam, and the mill will be known as the "Shakopee Roller Mill."

BUCK & HOFF, millers at Richmond, Va., have made an assignment.

THE mill of John P. Parkes, at Ripley, O., was burned May 1. Loss, \$25,000; insurance, \$6,500.

THE flour mill at Bagdad, Ky., has been purchased by S. Partee, of Frankfort, Ky., who will convert it into a 500-barrel roller mill.

FLANDREAU, Dak., wants a flour mill, and the citizens are considering the advisability of issuing \$3,000 city bonds for a bonus to some enterprising person who will build it.

THE 500-barrel mill owned by J. A. Stanton, of Sauk Rapids, Minn., which was destroyed by the cyclone, will be rebuilt.

AT Junction City, Kan., the flouring mills owned by C. H. Miller, were recently burned. Loss, \$20,000; insurance, \$12,500.

A COMPANY is being organized at Alvarado, Tex., for the purpose of building a \$15,000 roller mill. A. J. Brown and Mr. Snyder are at the head of the project, and \$10,000 has already been subscribed.

THE Wapella Milling Co., Wapella, Manitoba, with a capital stock of \$100,000, has been organized to build at 100-barrel mill, at estimate cost of \$14,000.

A 60-barrel roller mill is being built at Cannonsburg, Pa., for S. B. McPeak. The mill is expected to be in operation by June 20.

MONTREAL, Canada, has an elevator storage capacity of 1,350,000 bushels. This includes the new 600,000 bushel elevator just completed for the C. P. R. R.

THE contract to supply the File Hills, Qu'Appelle, Blood, Piegan and Sacree Indians with flour for the year, has awarded the Portage Milling Co., of Portage La Prairie, Manitoba.

SMITH & MAGRUDER are building a new roller mill at Cairo, Kan.

REPORT says, the roller mill owned by Hayton & Thornton, at Morning Sun, Iowa, will be moved to Kimball, Dak., where machinery will be added sufficient to increase the daily capacity to 100 barrels. It is to be ready for work by Sept. 1.

A STEAM flouring mill with a daily capacity of from 150 to 200 barrels will be erected at Tracy, Lyon Co., Minn., during the present season.

ON the night of May 12 the large mill of Andrew Eisenmeyer, at Trenton, Ill., together with an elevator were completely destroyed by fire. The mill was erected in 1860, contained modern machinery, and had a capacity of from 300 to 400 barrels. Total value of buildings burned \$60,000; insurance \$17,000.

ARTICLES of incorporation have been filed by the Osage Milling Company, of Pomona, Kansas.

PETER ANDERSON and C. S. Chapman have purchased the mill of Irving H. Chapman, at Oketo, Kan., for \$7,000. They will put in rolls.

A SUDDEN rise in the Pawnee river swept away the mill dam of Mayer & Munger, Brown's Grove, Kan., causing a considerable loss.

THE body of a man was recently taken from the lake at Milwaukee, Wis., and it is supposed to be that of E. H. Gratiot, a millwright of Platteville, Wis.

SOLD OUT. L. F. Randolph, Ovid, Mich.

STACY W. WOOD, Grand Rapids, Mich., has sold his mill.

THE flour mill of Carr & Bracker, at Jamestown, Pa., has been burned. Loss \$40,000.

BURNED, May 12, Elliott's flour mill, situated 4 miles from Mercer, Pa.

BURNED, May 13, the flouring mill of McAnally, Raney & Co., at Brownwood, Tex. Loss \$15,000; no insurance.

BURNED, May 13, Thomas W. Perry's flour mill at North Yamhill, Ore. Loss \$20,000, insured for \$8,000. Origin of fire unknown.

ROBERT MCGOWAN's grist-mill at Priceville, Ont., was burned May 1. Loss estimated at \$10,000; partially insured.

APRIL 29, the 125-barrel flour mill of J. & J. George, at Port Elgin, Ont., was totally destroyed by fire. Loss, \$18,000; insurance, \$16,000.

THE Hudnut Milling Co., with a capital stock of \$200,000, has been incorporated at Terre Haute, Ind. The directors are Theo. and B. C. Hudnut, A. A. Walker, Frank and Julius Brittebank.

THE contract has been let to rebuild the "Gem City Mills" at Quincy, Ill., recently destroyed by fire. It is to have a capacity of 700 barrels, on the full roller system.

A 100-BARREL roller mill will be built at Moosomin, Manitoba, by A. E. Hughes & Co. It is expected the mill will be in operation by Oct. 1.

MELDRUM, DAVIDSON & Co. have completed a 150-barrel mill at Peterborough, Ont. It is situated on the site of the old "Clegg Mill," and the motive power is had from water wheels.

W. HAGAR, proprietor of a grist mill at Clio, Mich., was drowned April 29 in the mill flume.

THE mills of C. A. Culbertson, at Broad Ripple, Ind., were burned recently. Loss, \$2,500; insurance, \$1,500. Cause of fire, incendiary.

AT Brevard, N. C., a roller mill is being built for S. E. Lucas. It is to be completed by Aug. 1, and will be run by water power.

A. W. ELLIS & Co. have completed a mill at Farmington, N. C.

THE Magnolia Mills, owned by Stinnett & Rucker, at Sherman, Tex., have been burned. Loss, \$24,000.

J. W. LANDERS & Co. are building a new mill at Morehead City, N. C.

A FLOUR and grist mill is being built at Cairo, W. Va., by Jas. McKinney & Bro.

JOHNSON & DAWSON are building a 50-barrel roller mill at Buffalo, Ky.

A STOCK company formed at Mansfield, Tex., are about to start a roller mill.

KAULL & NASH have purchased the old mill site of Phogley Bros., at Glen Elder, Kan., and will commence at once the erection of a 100-barrel roller mill, to cost not less than \$20,000.

THE contract has been let for building a 75-barrel roller mill for John F. Flessa, at Centertown, Mo.

IT is expected the new flour mill of J. R. Howes & Co., at Duluth, Minn., will soon be in operation. It is very conveniently located on the Dock front, with a railroad track in the rear. The site is 170x150 feet, which will allow for considerable enlargements if necessary.

A \$20,000 MILL will be built at Madison, Dak., this season, by N. B. Smith, of Ortonville.

A MILL is to be built at Will's Point, Tex., by the Farmers' Alliance of Van Zandt county.

A COMPLETE 75-barrel roller mill is being built at Athens, O., by W. Herrold.

MACHINERY for a 50-barrel mill has been contracted for by D. C. Taylor & Co., Trenton, Tenn.

A STOCK company has been formed for the purpose of erecting a roller mill at Mansfield, Tex.

A NEW mill is being built at Martinsville, Ind., by Vansickle & Seiders.

HOWARD, Neb., is to have a 50 to 75-barrel roller mill, to cost between \$12,000 and \$15,000.

ANDREWS & ELSOM, of Charlottesville, Va., have let the contract for building a 0-barrell roller mill.

AT San Angelo, Tex., the Pioneer Roller Mill Co. has been incorporated, with a capital of \$50,000, to build a 100-barrel roller mill, the contract for which has been let. The contract for the machinery has also been let at \$21,000.

ARTICLES of incorporation have been filed by the Houston Milling Co., at Beloit, Wis., with a capital stock of \$40,000.

EARLY on the morning of May 22 the carriage works and flouring mill of Tiffany Bros., at Jonesville, Mich., were burned. Loss about \$5,000; no insurance. The firm had made arrangements to move their works to Newton, Kan., and were about to load their machinery on the cars. The fire is thought to be incendiary.

A CONTRACT has been let for building a 100-barrel mill at Ellendale, Mont., to be completed by Oct. 1.

ON the evening of May 28 the overloaded floors of the Valley City Mills, Grand Rapids, Mich., gave away, and the whole interior of the huge structure fell into the basement, and a large portion of the contents was swept away by the mill race into the Grand river. Between 15,000 and 20,000 bushels of wheat were stored in the building. The damage is estimated at from \$80,000 to \$100,000. The mills were insured for \$50,000, but the insurance is worthless, as it only covers damage by fire. A new mill will be erected at once.

MAY 20 the mill of Earsley & Cook, at Herman, Minn., was destroyed by fire. The firm place their loss at \$15,000; no insurance. They have decided to rebuild, and expect to have a 150-barrel roller mill completed by Oct. 1.

HOWELL & GOODMAN are building a roller mill at Elwood, Neb. The building will be 45x55, three stories. Steam power will be used.

THE Droste Milling Co., with a capital stock of \$50,000, has been incorporated at Cincinnati, O.

THE mill of the Brown County Milling Co., Brownwood, Tex., recently burned, is to be rebuilt.

A NEW 200-barrel mill has just started up at Clear Lake, Dak., and the citizens are feeling quite proud.

THE large mill of John Saxe, at McMinnville, Ore., burned May 7. At the time of the fire there was between 8,000 and 10,000 bushels of wheat stored in the mill and adjoining warehouses. Loss, \$30,000; insurance, \$25,000, of which \$5,500 was on stock. Very little was saved. The fire was incendiary.

E. PIERSON'S mill at Sanford, Arizona, was recently burned. Loss, \$6,000; no insurance.

THE new mill of the City Milling Co., at Attica, Ind., was damaged to the amount of \$2,000 by the destructive cyclone which visited that place May 12.

MAY 13 the mill of Long & Reist, at Hamburg, N. Y., took fire from some unknown cause, and was totally destroyed. Loss, \$50,000; insurance, \$20,000.

THE Oswego Roller Mill Co. has been incorporated at Oswego, Kan., with a capital stock of \$75,000. Julius Lasker, of Oswego, Isaac Heidenheimer and Morris Lasker, of Galveston, Tex., are the directors.

FORMAN, Dak., offers a bonus of \$3,000 in cash and wheat, also a site of four acres, to the first party who will build a mill at that point.

THE Hobart Milling Co., consisting of S. L. Hobart, Harvey Thompson and Frank Kreig, has been organized at Carthage, Ill., for the purpose of building and operating a full roller mill at that place.

B. B. BUCKWORTH will build a \$15,000 flour mill at McCook, Neb., the citizens agreeing to pay him a bonus of \$2,000.

BLACK BROS. & SCHRIMPTON, of Blue Springs, Neb., have commenced work on their new mill, and it is expected to be ready for grinding by Sept. 1. It will be run by water power.

THE extensive milling plant formerly owned by Corson, Lasell & Wright, at Lodi, Cal., has been purchased by C. H. Corson and S. D. Rogers, who have formed a copartnership. The mill is being remodeled to the full roller system, will be known as the "Mae Flour Mills," and is to have a capacity of 250 barrels per day.

A 75-BARREL roller mill is being built at Herington, Kan., for Burt, Nelson & Co.

THE Pennsylvania Railroad Company is to erect in Philadelphia a large fire proof warehouse, which will enable the company to which it has been leased to handle 1,500,000 barrels of flour a year. The building will cost \$150,000 and will be finished September 1.

THERE is now in process of construction at the works of the Link Belt Machinery Company a conveyor for transferring cedar posts from a boat to the rear of a dock 350 feet deep, a conveyor for handling boxes of corn for a canning establishment, and an elevator for handling 200,000 cans per day. The company is also building a soap drier for Proctor & Gamble, of Cincinnati, O. The works are running full time and force.

PUGH'S flouring mill, near Indiana, Pa., was burned June 1. Loss, \$6,000; insurance, \$4,000.

A \$25,000 MILL will soon be built at Forman, Dak., by John Lee.

R. B. CARTER & Co. and A. N. Foorman have purchased the mill of S. Eshelman, at Eaton, Ind.

A NEW all roller mill is being built by the Upper Appomattox Co., at Petersburg, Va. The company was incorporated in 1784.

THE head millers of Minneapolis, Minn., have issued invitations for their annual excursion and picnic, to be held June 19 at Minnetonka. The card is of thin celluloid, in the shape of a flour tester, and is handsomely decorated and lettered. The programme includes speeches, base ball, foot ball, sack and barrel races, and other sporting events.

THE Prospect Machine & Engine Co., Cleveland, O., report their sales for the Jonathan Mills Universal Flour Dresser constantly on the increase, the month of May aggregating the greatest number of reels they have sold in any one month since starting, and that this month so far shows a corresponding increase over last month. Their engine business is also very encouraging. They have in process of construction at the present time a pair of Cummer Automatic engines of 2506 h. p. for the Lowell Carpet

Co., Lowell, Mass.; one of 190 h. p. for the Dennison Paper Co., Mechanics Falls, Me.; one of 265 h. p. for the Paige Car Wheel Co., Cleveland, O.; one of the same power for the Johnson Chair Co., Chicago, and several of their Simplex Automatic engines of 50 h. p. and under for Chicago and Cleveland parties. Among their recent shipments are a 449 h. p. engine to Wahl Bros., Chicago; one of 190 h. p. to the Derby Paper Mills, Birmingham, Conn., and one of 449 h. p. to the Nonantum Worsted Co., Newton, Mass.

J. G. SCHAUPP'S Planet roller flouring mill at Grand Island, Neb., was burned June 4, with an adjoining elevator. Loss, \$35,000; insurance, \$13,500.

A RECEIVER of grain in Chicago recently forwarded to a shipper in Nebraska just five cents per bushel as his share on a consignment of corn. The property had been sold in store at twenty-seven cents per bushel, twenty-two cents of which went to pay railroad cost of transportation, the storage and commission. In another case noted by the *Tribune*, the Nebraska shipper received the magnificent sum of \$26.50, being the whole amount coming to him from the sale of a carload of some 550 bushels of corn, the railroad freight on which to Chicago was \$147.50. The average of charges on these two parcels was five times, and the warehouse charges alone one-quarter, the sum remitted to the country shipper of the corn.

AT the recent election of officers of the Minneapolis Board of Trade, Capt. Russell Blakeley was elected president; Thomas Cochran, Jr., vice-president, and W. J. Phelps was re-elected secretary.

SITUATION WANTED.

Short advertisements will be inserted under this head for One Dollar each insertion.

WANTED—A practical Oatmeal Miller, one who understands his business and is willing to attend to it. Can receive additional information by calling on, or addressing CHARLES D. DANA, 10 State St., Chicago, Ills.

SPECIAL BUSINESS NOTICES

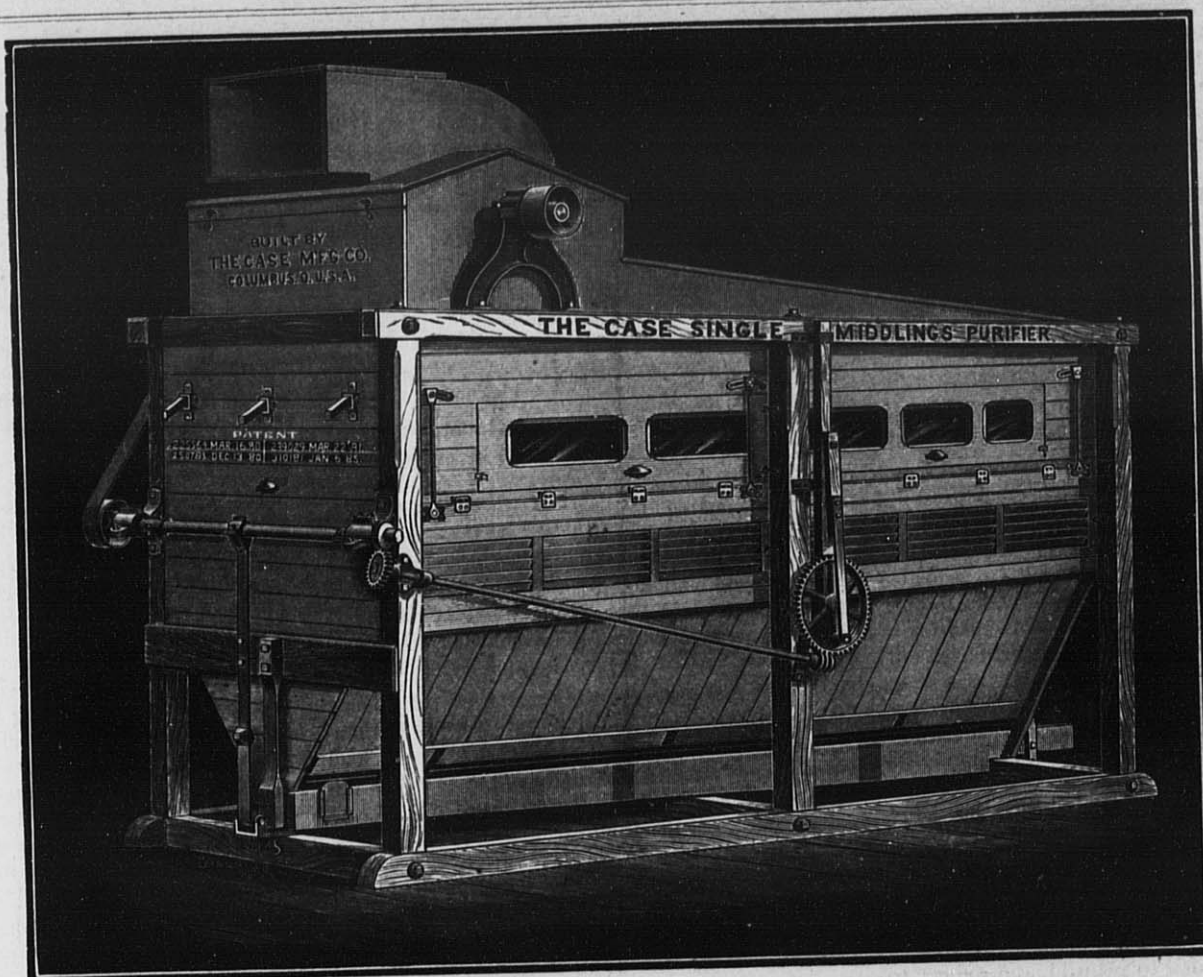
BOLTING CLOTH !

Don't order your Cloth until you have conferred with us; it will pay you both in point of quality and price. We are prepared with special facilities for this work. Write us before you order. Address, CASE MANUFACTURING CO. Office and Factory: Fifth St., North of Waughton, Columbus, Ohio.

THE "HOPEWELL" Turbine Water Wheel IS THE BEST

For full particulars address:

A. J. HOPEWELL,
Edinburg, Va.



OUR "SPECIAL" PURIFIER,

RECENTLY IMPROVED AND PERFECTED.

THIS machine has some new and very valuable features, and we think we can justly say it is the **PRINCE PURIFIER OF THE WORLD**. It has an enclosed case or sides. It has the lightest Shaker made. It has no conveyors to wear the middlings. It has a complete aspirator at the tail. It has a double shaking spout for a cut-off. It has our perfect Automatic Feed. It has our unequalled Cloth Cleaner. It has brass eccentrics three inches long. It has the most perfect control of the blast. It is guaranteed to run five years without any attention except to oil the bearings, and is beyond any question the most perfect, practical, and complete machine made in the world. We will back this statement up by placing it on trial beside any other Purifier made, and if it does not prove all we claim, it may be removed. We know just what we are talking about, and will enter into public tests, and pay all expenses of same, if others can be induced to do so.

Our Purifiers have no "pockets" to fill up and interfere with the working of the dust collector. They have no subdivided compartments to catch dust and allow it to slide back on the riddle. They have no brush to wear out the cloth, and drop barrels of good middlings each day into the tailings and low grade stock, a waste which costs the millers of this country *hundreds of thousand of dollars annually, but they don't observe it.* They have no roller feed to choke off, or feed half the time only half the width of riddle, thus tailing off rich material and permitting the middlings to be poorly purified. Hundreds of thousands of dollars are lost each year by the millers through imperfect feed.

We have none of these imperfections which can be found on the so-called "Standard Purifier," and remember we have not made a statement in this circular about Purifiers but what is **GOSPEL TRUTH**.

During the past year we have settled all disputes with the Consolidated Middlings Purifier Company, so that the Purifiers now made by us are licensed under all patents, about one hundred in number, owned by that Company; besides being protected by our own patents, which embody several most valuable and important features, owned and controlled exclusively by ourselves.

OUR IMPROVED ROLLS

are gaining friends wherever they go. They are the most durable and easily handled of any Roll on the market. They are finely finished in the high of the mechanical arts. Many millers have asked us, "Were not these machines made expressly for some Exposition?" and no wonder, for each one is a model of elegance. Our **PATENT AUTOMATIC FEED** should never be lost sight of when you are buying a Roll or Purifier. It always runs like clock-work, and even better, for it never stops when it should run, neither does it go too fast or too slow. **IT GOES JUST RIGHT.**

A full supply of Bolting Cloths, Belting, Pulleys, Cups, etc., always on hand. Write us for estimates on Flour Mills or our "SPECIAL" Corn Meal System. [MENTION THIS PAPER WHEN YOU WRITE.]

ADDRESS

THE CASE MFG. CO.

COLUMBUS, OHIO.